

## **POOR LEGIBILITY**

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April 28, 2006

**BUSINESS CONFIDENTIALITY CLAIM ASSERTED: THIS LETTER AND ALL ENCLOSURES ARE COMPANYCONFIDENTIAL<sup>1</sup>**

**Via Messenger**

Linda Ketellapper, SFD-7-B  
U.S. Environmental Protection Agency, Region IX  
Superfund Division  
75 Hawthorne Street  
San Francisco, CA 94105

Re: Response to 104(e) Request for Information – Omega Superfund Site  
Former McKesson Chemical facility, 9005 Sorensen Avenue, Santa Fe Springs, CA

Dear Ms. Ketellapper:

I am responding to the Environmental Protection Agency's ("EPA") request for information dated March 10, 2006 ("McKesson Santa Fe Springs Information Request"), directed to McKesson Corporation ("McKesson"). McKesson received your request on March 14, 2006. Upon request to Thanne Cox, McKesson was granted a two-week time extension for submitting its responses.

**GENERAL OBJECTIONS TO EPA REQUEST FOR INFORMATION**

McKesson objects to EPA's request for information on the following grounds, in addition to any other grounds set forth in this letter or otherwise available under law.

1. To the extent EPA seeks information from McKesson or McKesson Chemical Company ("MCC") that does not relate either to hazardous substances that have come to be located at the Site, or to McKesson's or MCC's ability to pay for a cleanup, EPA's requests are beyond EPA's statutory authority pursuant to CERCLA

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<sup>1</sup> McKesson Corporation, formerly doing business as McKesson Chemical Company, hereby asserts a claim of business confidentiality with regard to this letter and all information submitted to it, pursuant to 40 C.F.R. § 2.203. McKesson Corporation requests that EPA hold this letter and all accompanying information as strictly confidential and not subject to disclosure.

2. To the extent these requests may be construed to seek information or documents prepared by or for the EPA, or already in the possession of EPA, these requests are unduly burdensome.
3. To the extent these requests may be construed to seek information or documents obtained from publicly available databases, these requests are unduly burdensome.
4. EPA has no statutory authority to request the submission of information that is protected from disclosure by statutory or common law privileges.

## **RESPONSES TO EPA'S SPECIFIC QUESTIONS**

Question 1: State the full legal name, address, telephone number, position(s) held by and tenure of the individual(s) answering any of these questions on behalf of McKesson Corporation.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows: Kristina Veaco, Assistant Secretary, McKesson Corporation, One Post Street, 33<sup>rd</sup> Floor, San Francisco, California, 94104, (415) 983-9154.

Question 2: Identify and explain all former business forms used by McKesson Corporation (e.g., sole proprietorship, general partnership, limited partnership, joint venture or corporation). State the entire time period during which the business operated under each separate business form.

- a. Provide a copy of the Articles of Incorporation, Partnership Agreement, Articles of Organization or any other documentation demonstrating the particular business form, together with any and all amendments, for all business forms under which the business is or was ever operated.
- b. If the business is or was operating under a fictitious business name, identify the fictitious name and the owner(s) of the fictitious name, and provide a copy of the Fictitious Business Name Statement filed with the county in which it is or was doing business.

Identify and explain any and all sales of the company's assets if the sale represented a sale of substantially all of the assets of the business and identify and explain any investments in another business, company or corporation equating to 5% or more of that company by McKesson Corporation, its predecessors, subsidiaries and affiliated businesses, from the formation of McKesson Corporation as a business to the date of this letter.

RESPONSE: Subject to, and without waiving the foregoing objections,

McKesson responds as follows:

McKesson's predecessors in interest date back to the 1800s. If necessary, McKesson can provide further information regarding historical corporate forms. However, listed below are the business forms by which McKesson operated at all times relevant to the former MCC facility in Santa Fe Springs that is the subject of this information request and was in operation from 1976-86.

Foremost Dairies, Inc. a New York corporation, merged into McKesson & Robbins, Incorporated, a Maryland corporation, effective July 19, 1967. The name of the surviving corporation was changed, effective on the date of said merger, to Foremost-McKesson, Inc., a Maryland corporation. Foremost-McKesson, Inc. changed its name to McKesson Corporation, effective on July 27, 1983 ("McKesson-MD").

McKesson Holding Company was incorporated in the State of Delaware on June 9, 1987, for the purpose of holding all of the capital stock of McKesson-MD. McKesson Holding Company changed its name to McKesson Corporation on July 24, 1987 ("McKesson-DE"). McKesson-DE owned 100% of the stock of McKesson-MD.

In 1994, McKesson-DE underwent a corporate restructuring due to a sale of part of the company. As part of the restructuring, a new entity, SP Ventures, Inc. ("SP Ventures"), was incorporated in Delaware on July 7, 1994. McKesson-MD and McKesson-DE were acquired by Eli Lilly and Company on November 21, 1994, and subsequently McKesson-MD changed its name to LP Holding Corporation, and McKesson-DE changed its name to PCS Holding Corporation, effective on November 30, 1994.

On November 30, 1994, SP Ventures was renamed McKesson Corporation ("New McKesson"). New McKesson changed its name to McKesson HBOC, Inc., effective on January 12, 1999. McKesson HBOC, Inc. changed its name to McKesson Corporation, effective July 30, 2001.

McKesson further responds:

- a. Please see Declaration of Ivan D. Meyerson (Attachment A); Certificate of Assistant Secretary (Attachment B); Restated Certificate of "McKesson Corporation" (Attachment C); relevant portions of Board of Directors meeting minutes from 5/6/87, 6/3/87, and 7/22/87 meetings (Attachments D - F); and relevant portions of Shareholders meeting minutes from 7/22/87 meeting (Attachment G).
- b. The business that operated at the Property was McKesson Chemical Corporation ("MCC"), an operating division of Foremost-McKesson. No other d/b/a was used at the Property by any operating company.
- c. McKesson has undergone many sales of company assets. Please see the above description of the sales and investments relevant to this request. See also Attachments A and B.

If after reviewing this information, USEPA requires further information or documentation regarding the foregoing transactions, McKesson is willing to discuss with USEPA any remaining questions or issues and respond with further information or documentation to resolve those questions or issues.

Question 3: Documentation obtained by EPA indicates that on or about December 15, 1975, Foremost-McKesson, Inc., a Maryland corporation, ("Foremost-McKesson") entered into an agreement to lease the real property located at 9005 Sorensen Avenue, Santa Fe Springs, California (the "Property") and that McKesson Corporation has stated that it is a successor to Foremost-McKesson and, as such, has succeeded to its obligations under said lease. Explain in detail the nature of the transaction by which McKesson Corporation assumed the liabilities of Foremost-McKesson, Inc. in connection with the Property and state whether McKesson Corporation has also succeeded to Foremost-McKesson's environmental liabilities as well. Provide copies of all documentation evidencing such assumption of liabilities, including, but not limited to, any asset purchase agreements, assumption agreements, merger agreements or stock purchase agreements. In addition, provide a copy of the aforementioned December 15, 1975 lease agreement, together with any and all amendments thereto.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

As explained in response to Question 2, Foremost-McKesson became McKesson -MD by name change in 1983. Lease obligations were therefore unaffected. McKesson-MD's lease obligations were transferred to McKesson-DE. See Attachment A.

If after reviewing this information, USEPA requires further information or documentation regarding this response, McKesson is willing to discuss with USEPA any remaining questions or issues and respond with further information or documentation to resolve those questions or issues.

Question 4: If McKesson Corporation did not assume the environmental liabilities of Foremost-McKesson in connection with the Property, state whether another entity assumed such environmental liabilities and provide that entity's name and status, if known. Provide copies of all documentation in your possession evidencing such assumption of liabilities.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

Not applicable. McKesson Corporation did assume any environmental liabilities of Foremost-McKesson in connection with the Property.

Question 5: Explain the circumstances and rationale behind McKesson Corporation's

statement in the currently pending case filed against McKesson Corporation by Angeles Chemical Company that McKesson Corporation is the successor-in-interest to Foremost-McKesson and state whether in its capacity as successor-in-interest, McKesson Corporation assumed the environmental liabilities of Foremost-McKesson.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

Please see response to Question 2. McKesson Corporation did assume the environmental liabilities of Foremost-McKesson. See Attachment A.

If after reviewing this information, USEPA requires further information or documentation regarding this response, McKesson is willing to discuss with USEPA any remaining questions or issues and respond with further information or documentation to resolve those questions or issues.

Question 6: Documentation obtained by EPA shows that in 1997, LP Holding Corporation (f/k/a McKesson Corporation f/k/a Foremost-McKesson), a Maryland corporation, merged with and into PCS Holding Corporation (n/k/a AdvancePCS Holding Corporation), a Delaware corporation. Provide copies of all documentation evidencing this merger transaction, including the merger agreement itself and any other documents relating thereto.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

Please see response to Question 2 and Attachments A and B.

If after reviewing this information, USEPA requires further information or documentation regarding this response, McKesson is willing to discuss with USEPA any remaining questions or issues and respond with further information or documentation to resolve those questions or issues.

Question 7: State whether PCS Holding Corporation (n/k/a/ Advance PCS Holding Corporation) assumed the environmental liabilities of LP Holding Corporation (f/k/a McKesson Corporation f/k/a/ Foremost-McKesson) as part of the merger between these two entities. If so, provide copies of all documentation evidencing such assumption of liabilities. If not, explain why PCS Holding Corporation did not succeed to these liabilities and provide documentation in support of your statement.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

No. See Attachment A.

Question 8: Describe the corporate affiliation between McKesson Corporation, a Delaware

corporation, and AdvancePCS Holding Corporation. Provide copies of all documentation evidencing such affiliation.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

None. See Attachment A.

Question 9: Describe the corporate affiliation between McKesson Corporation, a Delaware corporation, and McKesson Chemical Company. Provide copies of all documentation evidencing such affiliation.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

CBI Determined

Question 10: Documentation obtained by EPA indicates that McKesson Corporation (f/k/a Foremost-McKesson), a Maryland corporation, contemplated a reincorporation in the State of Delaware sometime in 1987 or 1988. State whether this reincorporation was completed, and, if it was, provide copies of all documentation evidencing such reincorporation.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

See response to Question 2 and Attachment A.

If after reviewing this information, USEPA requires further information or documentation regarding this response, McKesson is willing to discuss with USEPA any remaining questions or issues and respond with further information or documentation to resolve those questions or issues.

Question 11: State whether McKesson Corporation continues to lease the Property. Provide copies of all documentation evidencing such current leasehold.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

No.

Question 12: State whether McKesson Corporation currently subleases, or in the past has ever subleased, the Property to another individual or entity. Provide copies of all

documentation evidencing such current or past sublease arrangement.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

Yes. The Property was previously subleased to Environmental Materials and Recycling, LLC. A copy of the sublease, first amendment of sublease, and second amendment of sublease are enclosed as Attachments I, J and K.

Question 13: State whether McKesson Corporation currently operates at the Property. If so, describe its operations.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

McKesson Corporation currently "operates" only remediation efforts at the Property, including groundwater and soil vapor extraction and treatment systems.

Question 14: State whether any other entities affiliated with McKesson Corporation ever operated at the Property and identify such entities. For each such entity, set forth the periods of operation at the Property, the nature of its operations, and provide copies of all documentation evidencing each such entity's operations at the Property.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

MCC operated at the Property from 1976 through 1986. MCC was a wholesale chemicals distributor, dealing in commercially useable, virgin chemicals. Operations included chemical repackaging and distribution. Please see Attachment H (Remedial Investigation (June 25, 1992)) and Attachment N (McKesson's "Chemical Operations and Safety Manual") for more detailed descriptions of the operations conducted. Note that Attachment N is a document that generally describes chemical operations at all MCC sites and is not specific to the McKesson Santa Fe Springs site.

Question: 15: List all EPA Identification numbers issued to McKesson Corporation or any of its predecessors, successors, subsidiaries, affiliates, contractors, trustees, assigns or agents in connection with the Property and set forth the address and exact name associated with each such number. Provide all documentation evidencing the issuance to McKesson Corporation or its predecessors, successors, subsidiaries, affiliates, contractors, trustees, assigns or agents of each such EPA Identification number.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

McKesson was assigned EPA Identification CAD060395753 in connection with its hazardous waste disposal activities at the Property.

Question 16: Provide a list of all former and/or current employees who were employed at the Property at any time during the period that McKesson Corporation or any of its predecessors, successors, subsidiaries, affiliates, contractors, trustees, assigns or agents were associated with the Property. For each employee listed, provide the following information:

- a. The employee's full name;
- b. The employee's Social Security Number;
- c. The employee's current or last known address(es) and telephone number(s), including the last known date on which you believe each address and telephone number was current;
- d. Identify the entire time period that the employee worked at the Property and specify whether the employee is a current or former employee; and
- e. The position(s) the employee held with each business entity during his or her entire period of employment at the Property and the year or years that the employee held each listed position.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

There are no current employees at the Property. Please see Attachment L, a list of last known addresses and telephone numbers for former employees as well as their position and period of employment (where known).

Social Security Numbers are not being provided pursuant to The Privacy Act of 1974 (5 USC §552a (note)) which requires federal agencies requesting Social Security Numbers to provide the authority which authorizes the solicitation of the information, whether disclosure is mandatory or voluntary, and the principal purposes for which the information is intended to be used.

Question 17: Identify and explain all current and past business operations conducted at the Property by McKesson Corporation or any of its predecessors, successors, subsidiaries, affiliates, contractors, trustees, assigns or agents. Each description of each such operation shall include such information as the dates of operation, the product or products made and a detailed description of the production process or processes. For each such production process, provide the following information:

- a. A scaled map of the Property which includes the locations of process areas, buildings and features. Describe the physical characteristics of the Property including, but not limited to, the following:
  - 1) Surface structures (e.g., buildings, tanks, containment and/or storage areas, etc.), including dates of operation or use;
  - 2) Subsurface structures (e.g., underground tanks, sumps, pits, clarifiers, etc.), including dates of operation or use;
  - 3) Identify the contents of any above-or under-ground tanks, or any other storage container or unit (including storage buildings) on the Property. As part of your response to this question, provide a timeline or chart detailing the substance stored in each tank or container along with the dates each substance was stored in such tank or container.
- b. Indicate the location of all waste storage and disposal areas. Identify the quantities, kinds of wastes (e.g., solvents, waste water) and methods of accumulation, storage, and/or disposal for each location identified in response to this question.
- c. Provide a list of all chemicals or raw materials stored on the Property or used in production on the Property, identifying the chemical composition and the quantities used at any point in time during the ownership or occupation of the Property by McKesson Corporation or any of its predecessors, successors, subsidiaries, affiliates, contractors, trustees, assigns or agents. Provide Material Safety Data Sheets (MSDSs) for all such chemicals or raw materials, if appropriate. Provide all existing documents concerning the quantities of such chemicals or raw materials purchased and/or used on or near the Property.
- d. Describe the processes and procedures for receiving, storing, distributing and handling chemicals identified in question 17(c) above.
- e. Provide copies of all waste manifests that identify a generator located at the Property at any time during the period in which McKesson Corporation or any of its predecessors, successors, subsidiaries, affiliates, contractors, trustees, assigns or agents operated at the Property.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

McKesson Chemical Company, which operated at 9005 Sorenson

Avenue, Santa Fe Springs, CA from 1976 through 1986, conducted business as a wholesale chemicals distributor, dealing in commercially useable, virgin chemicals. Operations included chemical repackaging and distribution. Please see Attachment H (Remedial Investigation (June 25, 1992)) and Attachment N (McKesson's "Chemical Operations and Safety Manual") for more detailed descriptions of the operations conducted. The site is fenced and occupies approximately 4.3 acres in an industrialized area of Santa Fe Springs, CA. During operation, the site was organized into four main areas for the purpose of chemical packaging: 1) the solvent repack area; 2) the corrosive repack area; 3) the hydrogen peroxide repack area; and 4) the Freon blending area. Chemicals were stored in both aboveground storage tanks ("ASTs") (acids, corrosives, solvents) and underground storage tanks ("USTs") (mainly solvents ) [note: also included diesel, gasoline, xylene, alcohol, formaldehyde, etc.]and piped to packaging areas as needed. Bulk chemicals were transported to and from the facility by rail and by truck. Finished products were generally transported from the facility by truck.

- a. A scaled map of the Property is included with the Remedial Investigation (See Attachment H) at Plates 3 – 6, 10, 15, 17, and 19a-d.

#### 1) Surface Structures

Forty-four ASTs (now demolished) were situated on the Property. The tanks were contained within 2-to-3-foot-high concrete containment berms and separated by internal dike walls. The ASTs were grouped in four locations: 1) adjacent to the solvent repack area; 2) the Freon blending area; 3) the hydrogen peroxide packaging area; and 4) the corrosive packaging area. The solvent storage area contained 13 steel tanks (S1 through S13); all ASTs were removed during demolition activities conducted in December 1990. Tanks within the Freon blending area (S14 through S17) had been previously removed. The hydrogen peroxide and corrosive storage areas contained 27 steel tanks (C1 through C27), all of which were removed in December 1990.

The facility contained a RCRA-permitted drum-storage area that was designated for the onsite storage of hazardous waste. The bermed, formerly covered, concrete pad in this area measured 26 by 20 by 0.5-foot-thick and had the capacity for storing 144 drums on wooden pallets. After limited soil investigation, this drum storage area was acknowledged by DTSC to be officially closed, in accordance with RCRA, by letter dated June 28, 1990.

Railroad spurs were located along the northern and western boundaries of the Property. Loading platforms and underground distribution lines were associated with the offloading of chemicals delivered via the railroad spurs.

Three buildings were present at the facility. The main building contained

the office, warehouse, and packing and storage area. The warehouse was historically used for chemical and material storage. The other two buildings were yard offices. The site also contained a truck scale and a truck pit for loading and unloading. Loading platforms and a drum-wash shed were removed during demolition activities conducted during December 1990.

## 2) Subsurface Structures

Twenty-one USTs and two concrete lined sumps were situated in the subsurface of the property and were predominately located adjacent to a former aboveground solvent tank storage area. After the facility was closed, the USTs were emptied using a vacuum truck. The USTs were emptied again in December 1990 during aboveground demolition activities after it was discovered that surface runoff water had entered some of the USTs with unsecured fill-pipe caps.

A concrete trench-sump was present in the northern portion of the facility adjacent to one of the railroad spurs. The sump contained piping for chemical transport. Contents of railroad cars were sometimes offloaded directly to these lines and transported to other areas of the facility.

The site also contained a neutralization pit and a runoff control sump (described in more detail below).

## 3) Contents of ASTs and USTs

Historical contents of ASTs S-1 through S-13 (formerly located in bermed solvent tank area immediately west of the UST area) consisted of PCE, methylene chloride, 1,1,1-TCA, TCE, ethylene glycol, propylene glycol, glycol ether, butyl cellosolve, isopropyl alcohol, Sorbitol (polyol), and Freon-113. (See Table 5 in Attachment H.)

The historical contents of ASTs S-14 through S-17 (formerly located within a bermed containment in the Freon-blending area to the northeast of the UST farm) contained chemicals associated with the Freon blending operation, but the specific chemicals stored in each tank are not known. (See Table 5 in Attachment H.)

The historical contents of ASTs C-1 through C-28 (formerly located along the western perimeter of the site) include nitric acid, sulfuric acid, hydrochloric acid, acetic acid, sodium hydroxide, potassium hydroxide, Triton-N-101, Triton-N-100, naplum, and sludge. (See Table 6 in Attachment H.)

The historical contents of USTs U-2 through U-20 (formerly located near the middle portion of the northeast quadrant of the site) included fuels (gasoline), Stoddard solvent, mineral spirits, MCK solvent (a non-chlorinated, naphthene-based solvent), acetone, hexane, methanol, hydrocarbon solvent, cellosolve

acetate, PX-2, glycol ether ED, xylene, toluene, heptane, isopropyl alcohol, methanol, and MEK. UST U-1 (formerly located in the southeast quadrant of the site adjacent to the diesel dispenser) historically contained diesel fuel. UST U-21 (formerly located immediately south of the AST storage area adjacent to the solvent packaging shed) was used as a solvent waste tank and also contained formaldehyde at various times. (See Table 7 in Attachment H.)

Information provided to the Santa Fe Springs Fire Department in 1984 indicates that ASTs on site held acetic acid, ethylene glycol, formaldehyde, formic acid, hydrochloric acid, methyl chloride, nitric acid, potassium hydroxide, sodium hydroxide, sulfuric acid, 1,1,1-Trichloroethane, and hydrogen peroxide. USTs on site held acetone, isopropyl alcohol, methyl alcohol, toluene, and xlenol. (See Attachment R).

b. Location of Waste Storage and Disposal Areas

Two waste streams were generated during facility operations: 1) corrosive drum-rinsing operations produced waste water; and 2) the solvent distribution lines (piping) were flushed with isopropyl alcohol (IPA) and this generated a waste stream consisting of solvent-saturated IPA.

The corrosive drum-rinsing operations, which took place in the former drum-wash shed (shown on Plate 3 of Attachment H), generated approximately 1,500 gallons per day (gpd) of wastewater. Wastewater that collected on a concrete slab was designed to drain to a rubber-lined concrete neutralization pit. Prior to discharge to the sanitary sewer, the wastewater was monitored for pH and other critical parameters. The discharge was permitted by L.A. County Sanitation Industrial Wastewater Discharge Permit No. 3785 (June 17, 1985). After being rinsed, the drums were sent to a drum recycler and reconditioner. Drums were then either returned to the facility for reuse or disposed by the recycler.

Solvent-saturated IPA, generated during flushing of the solvent lines, was to be recovered in a closed-head metal drum. The drum was marked with the name of the flushed solvent and "IPA"; flushed material was reused to flush compatible products until it could no longer adequately clean the lines. In addition, factual and technical investigation also indicates that contrary to corporate policy and instruction, line flush or other chemical product was sometimes drained from hoses or otherwise discharged into the diked area around the above-ground solvent storage tanks, causing soil and groundwater contamination in that location.

Outside containment areas, surface water runoff produced during periods of rainfall drained to a runoff control sump located in the northeast section of the property. The sump was approximately 2 by 2 by 4 feet and was equipped with a locking gate valve. When the facility was in operation, a runoff water sample was tested for pH and specific gravity before the collected runoff was discharged

to an unlined drainage channel north of the site. (The discharge point is shown on Plate 3 of Attachment H). Rainwater discharge was controlled by National Pollution Discharge and Elimination System (NPDES) Permit No. CA0057631, issued by the California Regional Water Quality Control Board ("RWQCB") in December 1975 until that permit was allowed to expire in 1980.

Additionally, as discussed above, UST U-21 (formerly located immediately south of the AST storage area adjacent to the solvent packaging shed) was used as a solvent waste tank.

Information provided to the Santa Fe Springs Fire Department in 1984 reveals that containers stored in the yard, warehouse and on the rail spurs held acetic acid, acetone, aluminum sulfate, ammonium thiosulfate, butyl acetate, butyl alcohol, cyclohexane, dibutyl ketone, ethyl acetate, ethylene dichloride, ethylene glycol, formic acid, hexylene glycol, hydrochloric acid, hydrofluoric acid, isobutanol, isopropyl alcohol, isopropylamine, methyl alcohol, methylene chloride, methyl isobutyl ketone, morpholine, nitric acid, potassium hydroxide, n-propyl acetate, n-propyl alcohol, Stoddard solvent, sodium hydroxide, styrene monomer, sulfuric acid, toluene, tetrahydrofuran, 1,1,1-Trichloroethane, triethanolamine, monoethanolamine, sodium benzenesulfonic acid, xylene, methyl ethyl ketone, trichloroethylene, SDA alcohol, and hydrogen peroxide. (See Attachment R).

- c. Lists of chemicals stored at McKesson's Santa Fe Springs site are contained in Attachments T and U. Material Safety Data Sheets ("MSDSs") are enclosed at Attachment M. Note that the chemicals listed on the enclosed MSDSs may or may not have been used at the MCC Santa Fe Springs site. They are MSDSs that were included in MCC's general files and may have been applicable to other MCC sites.
- d. The process and procedure for receiving, storing, distributing and handling chemicals at the Property is outlined in McKesson's "Chemical Operations and Safety Manual" which is enclosed as Attachment N.
- e. Copies of all waste manifests that identify a generator located at the Property are enclosed at Attachment O.

Question 18: Provide a list of all technical or analytical information relating to the Property, regardless of the date(s) such information was prepared or generated, including, but not limited to: a) reports; b) data and other documents related to soil, water (ground and surface), geology, hydrogeology, soil sampling, soil gas sampling, ground water sampling, or air quality on and about the Property; and c) any known releases of hazardous substances to any medium (soil, water or air) on and/or about the Property. A subsequent request may then be made to obtain any

Ms. Linda Ketellapper, SFD-7-B

April 28, 2006

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or all of these documents.

RESPONSE: Subject to, and without waiving the foregoing objections, McKesson responds as follows:

Voluminous technical and analytical information exist for the Property. In addition to McKesson's own former environmental consulting group, McKesson Environmental Services, three different consulting firms – Harding Lawson Associates, GeoMatrix, and GeoSyntec – have produced numerous technical reports for McKesson. In response to this Question, McKesson produces an index of all technical documents generated by these companies regarding the Property. Upon request, McKesson will provide EPA with any document referenced in the index. See Attachment P.

Very Truly Yours,  
  
Kristina Veaco  
Assistant Secretary

## **Index to Attachments**

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# **Attachment “A”**

## DECLARATION OF IVAN D. MEYERSON

I, Ivan D. Meyerson, declare as follows:

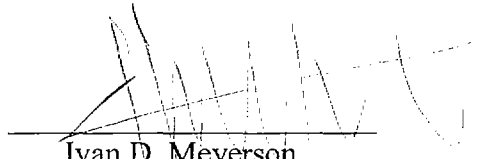
1. Until March 31, 2006, I was Executive Vice President, General Counsel and Secretary of McKesson Corporation.
2. In my capacity as a corporate officer, I was directly involved in the 1994 corporate restructuring of McKesson Corporation which is described herein. As a consequence, the facts stated in this declaration are personally known to me and I have first-hand knowledge of them. If called as a witness, I could and would testify competently thereto.
3. In the latter half of 1994, McKesson Corporation underwent a corporate restructuring in connection with the acquisition of its pharmaceutical benefits management business by Eli Lilly and Company ("Eli Lilly"). Immediately prior to that restructuring, McKesson Corporation, a Delaware Corporation ("McKesson-DE"), owned 100% of the stock of McKesson Corporation, a Maryland Corporation ("McKesson-MD"). The pharmaceutical benefits management business was conducted primarily through direct and indirect subsidiaries of both McKesson-DE and McKesson-MD.
4. As part of the restructuring, a new entity, SP Ventures, Inc. (SP Ventures"), was incorporated in Delaware on July 7, 1994. Subsequently, on November 21, 1994, all of the assets and any of the liabilities of both McKesson-DE and McKesson-MD -- with the exception of the assets and liabilities of the pharmaceutical benefits management business which were being acquired by Eli Lilly -- were transferred to, and

assumed by, SP Ventures. On November 30, 1994, SP Ventures was renamed McKesson Corporation and its stock was distributed to the shareholders of McKesson-DE.

5. The remaining assets and liabilities of McKesson-DE, and its subsidiary McKesson-MD, were exclusively those of the pharmaceutical benefits management business. McKesson-DE and McKesson-MD were then acquired by ECO Acquisition Corporation, a subsidiary of Eli Lilly. On November 30, 1994, McKesson-DE was renamed PCS Holding Corporation and McKesson-MD was renamed LP Holding Corporation.

6. Consequently, although LP Holding Corporation is technically the same corporation as McKesson-MD, the only assets owned by that entity at the time of its acquisition by Eli Lilly were those related to McKesson's pharmaceutical benefits management business. The assets and operations of that business are totally unrelated to the subject matter of this investigation.

I swear under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed on the 27<sup>th</sup> day of April, 2006 at San Francisco, California.

  
Ivan D. Meyerson

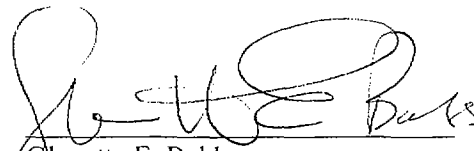
# **Attachment “B”**

CERTIFICATE OF ASSISTANT SECRETARY

I, Glenette E. Babb, Assistant Secretary of McKesson Corporation, a Delaware corporation, do hereby certify that:

1. Foremost Dairies, Inc. a New York corporation, merged into McKesson & Robbins, Incorporated, a Maryland corporation, effective July 19, 1967. The name of the surviving corporation was changed, effective on the date of said merger, to Foremost-McKesson, Inc., a Maryland corporation.
2. Foremost-McKesson, Inc. changed its name to McKesson Corporation, effective on July 27, 1983 ("McKesson-Maryland").
3. McKesson Holding Company was incorporated in the State of Delaware on June 9, 1987, for the purpose of holding all of the capital stock of McKesson-Maryland.
4. McKesson Holding Company changed its name to McKesson Corporation on July 24, 1987 ("McKesson-Delaware").
5. SP Ventures, Inc. was incorporated in the State of Delaware on July 7, 1994.
6. McKesson-Maryland transferred and assigned all of its assets, except Clinical Pharmaceuticals, Inc. and PCS Health Systems, Inc. to SP Ventures, Inc., effective November 21, 1994.
7. McKesson-Delaware transferred and assigned all of its assets except Clinical Pharmaceuticals, Inc., and PCS Health Systems, Inc., to SP Ventures, Inc., effective on November 21, 1994.
8. McKesson-Maryland and McKesson-Delaware were each acquired by Eli Lilly and Company on November 21, 1994, and subsequently McKesson-Maryland changed its name to LP Holding Corporation, and McKesson-Delaware changed its name to PCS Holding Corporation, effective on November 30, 1994.
9. SP Ventures, Inc. changed its name to McKesson Corporation, effective on November 30, 1994 ("New McKesson").
10. New McKesson changed its name to McKesson HBOC, Inc., effective on January 12, 1999.
11. McKesson HBOC, Inc. changed its name to McKesson Corporation, effective July 30, 2001.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Corporation this 27<sup>th</sup> day of April, 2006.

  
Glenette E. Babb  
Assistant Secretary

# **Attachment “C”**

# Delaware

PAGE 1

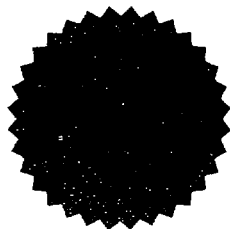
*The First State*

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED ARE TRUE AND CORRECT COPIES OF ALL DOCUMENTS FILED FROM AND INCLUDING THE RESTATED CERTIFICATE OF "MCKESSON CORPORATION" AS RECEIVED AND FILED IN THIS OFFICE.

THE FOLLOWING DOCUMENTS HAVE BEEN CERTIFIED:

RESTATED CERTIFICATE, FILED THE NINTH DAY OF NOVEMBER, A.D. 2001, AT 9 O'CLOCK A.M.

CERTIFICATE OF AMENDMENT, FILED THE FIRST DAY OF AUGUST, A.D. 2002, AT 9 O'CLOCK A.M.



*Harriet Smith Windsor*

Harriet Smith Windsor, Secretary of State

2417015 8100X

AUTHENTICATION: 2175813

020804648

DATE: 12-30-02

**RESTATED**

**CERTIFICATE OF INCORPORATION**

*STATE OF DELAWARE  
SECRETARY OF STATE  
DIVISION OF CORPORATIONS  
FILED 09:00 AM 11/09/2001  
010568005 - 2417015*

**OF**

**McKESSON CORPORATION**

**(Duly Adopted in Accordance with Section 245 of**

**the Delaware General Corporation Law)**

**Originally Incorporated on July 7, 1994**  
**Under the Name SP Ventures, Inc.**

**(Restates and Integrates Only)**

**ARTICLE I.**

The name of the Corporation is McKesson Corporation.

**ARTICLE II.**

The address of the registered office of the Corporation within the State of Delaware is 2711 Centerville Road, Suite 400, Wilmington 19808, County of New Castle. The name of the registered agent of the Corporation at such address is The Prentice-Hall Corporation System, Inc.

**ARTICLE III.**

The purpose of the Corporation is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of the State of Delaware.

**ARTICLE IV.**

The total number of shares of stock of all classes which the Corporation has authority to issue is 500,000,000 shares, divided into 100,000,000 shares of Series Preferred Stock, par value \$0.01 per share (herein called the "Series Preferred Stock"), and 400,000,000 shares of Common Stock, par value \$.01 per share (herein called the "Common Stock"). The aggregate par value of all shares having par value is \$5,000,000.

The Board of Directors of the Corporation is expressly authorized, as shall be stated and expressed in the resolution or resolutions it adopts, subject to limitations prescribed by law and

the provisions of this Article IV, to provide for the issuance of the shares of Series Preferred Stock in one or more class or series, in addition to the shares thereof specifically provided for in this Article IV, and by filing a certificate pursuant to the applicable law of the State of Delaware, to establish from time to time the number of shares to be included in each such series, and to fix for each such class or series such voting powers, full or limited, or no voting powers, and such distinctive designations, powers, preferences and relative, participating, optional or other special rights and such qualifications, limitations or restrictions thereof, including without limitation, the authority to provide that any such class or series may be (i) subject to redemption at such time or times and at such price or prices; (ii) entitled to receive dividends (which may be cumulative or non-cumulative) at such rates, on such conditions, and at such times, and payable in preference to, or in relation to, the dividends payable on any other class or classes or any other series; (iii) entitled to such rights upon the dissolution of, or upon any distribution of the assets of, the Corporation; (iv) convertible into, or exchangeable for, shares of any other class or classes of stock, or of any other series of the same or any other class or classes of stock, of the Corporation at such price or prices or at such rates of exchange and with such adjustments; or (v) subject to the terms and amounts of any sinking fund provided for the purchase or redemption of the shares of such series; all as may be stated in such resolution or resolutions.

The number of authorized shares of Series Preferred Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the Common Stock, without a vote of the holders of the Series Preferred Stock, as the case may be, or of any series thereof, unless a vote of any such holders is required pursuant to the provisions of this Article IV or the certificate or certificates establishing any additional series of such stock.

A description of each class of the Corporation's stock, with the powers, designations, preferences and relative, participating, optional and other rights, if any, and the qualifications, limitations and restrictions thereof, is as follows:

## **I. SERIES PREFERRED STOCK**

### **A. General Provisions Relating to All Series**

1. The Board of Directors shall have authority to classify and reclassify any unissued shares of the Series Preferred Stock from time to time by setting or changing in any one or more respects the powers, designations, preferences and relative, participating, optional and other rights, if any, and the qualifications, limitations and restrictions of the Series Preferred Stock. Subject to the foregoing, the power of the Board of Directors to classify and reclassify any of the shares of Series Preferred Stock shall include, without limitation, subject to the provisions of this Certificate of Incorporation, authority to classify or reclassify any unissued shares of such stock into one or more series of Series Preferred Stock, and to divide and classify shares of any series into one or more series of Series Preferred Stock by determining, fixing or altering one or more of the following:

(a) The distinctive designation of such series and the number of shares to constitute such series; provided that, unless otherwise prohibited by the terms of such or any other series, the number of shares of any series may be decreased by the Board of Directors in connection with any classification or reclassification of unissued shares and the number of shares of such series may be increased by the Board of Directors in connection with any such classification or reclassification, and any shares of any series which have been redeemed, purchased, otherwise acquired or converted into shares of Common Stock or any other series shall remain part of the authorized Series Preferred Stock and be subject to classification and reclassification as provided in this Section.

(b) Whether or not and, if so, the rates, amounts and times at which, and the conditions under which, dividends shall be payable on shares of such series, whether any such dividends shall rank senior or junior to or on a parity with the dividends payable on any other series of Series Preferred Stock, and the status of any such dividends as cumulative, cumulative to a limited extent or non-cumulative and as participating or non-participating.

(c) Whether or not shares of such series shall have voting rights, in addition to any voting rights provided by law and, if so, the terms of such voting rights.

(d) Whether or not shares of such series shall have conversion or exchange privileges and, if so, the terms and conditions thereof, including provision for adjustment of the conversion or exchange rate in such events or at such times as the Board of Directors shall determine.

(e) Whether or not shares of such series shall be subject to redemption and, if so, the terms and conditions of such redemption, including the date or dates upon or after which they shall be redeemable and the amount per share payable in case of redemption, which amount may vary under different conditions and at different redemption dates; and whether or not there shall be any sinking fund or purchase account in respect thereof, and if so, the terms thereof.

(f) The rights of the holders of shares of such series upon the liquidation, dissolution or winding up of the affairs of, or upon any distribution of the assets of, the Corporation, which rights may vary depending upon whether such liquidation, dissolution or winding up is voluntary or involuntary and, if voluntary, may vary at different dates, and whether such rights shall rank senior or junior to or on a parity with such rights of any other series of Series Preferred Stock.

(g) Whether or not there shall be any limitations applicable, while shares of such series are outstanding, upon the payment of dividends or making of distributions on, or the acquisition of, or the use of moneys for purchase or redemption of, any stock of the Corporation, or upon any other action of the Corporation, including action under this Section, and, if so, the terms and conditions thereof.

(h) Any other powers, designations, preferences and relative, participating, optional and other rights, if any, and any other qualifications, limitations and restrictions, on the shares of such series, not inconsistent with law and this Certificate of Incorporation.

2. For the purposes hereof and of any certificate providing for the classification or reclassification of any shares of Series Preferred Stock or of any other charter document of the Corporation (unless otherwise provided in any such certificate or document), any class or series of stock of the Corporation shall be deemed to rank:

(a) Prior to a particular class or series of stock if the holders of such class or classes or series shall be entitled to the receipt of dividends or of amounts distributable in the event of any liquidation, dissolution or winding up, as the case may be, in preference to or with priority over the holders of such particular class or series of stock;

(b) On a parity with a particular class or series of stock, whether or not the dividend rates, dividend payment dates, voting rights or redemption or liquidation prices per share thereof, be different from those of such particular class or series of stock, if the rights of holders of such class or classes or series to the receipt of dividends or of amounts distributable in event of any liquidation, dissolution or winding up, as the case may be, shall be neither (i) in preference to, or with priority over, nor (ii) subject or subordinate to, the rights of holders of such particular class or series of stock in respect of the receipt of dividends or of amounts distributable in the event of any liquidation, dissolution or winding up of the Corporation, as the case may be; and

(c) Junior to a particular class or series of stock if the rights of the holders of such class or classes or series shall be subject or subordinate to the rights of the holders of such particular

class or series of stock in respect of the receipt of dividends or of amounts distributable in the event of any liquidation, dissolution or winding up, as the case may be.

## **B. Series A Junior Participating Preferred Stock**

1. **Designation and Amount.** The shares of this series shall be designated as "Series A Junior Participating Preferred Stock" and the number of shares constituting such series shall initially be 10,000,000, par value \$0.01 per share, such number of shares to be subject to increase or decrease by action of the Board of Directors as evidenced by a certificate or certificates evidencing such change.

### **2. Dividends and Distributions.**

(a) The holders of shares of Series A Junior Participating Preferred Stock shall be entitled to receive, when, as and if declared by the Board of Directors out of funds legally available for the purpose, quarterly dividends payable in cash on the first business day of January, April, July and October in each year (each such date being referred to herein as a "Series A Quarterly Dividend Payment Date"), commencing on the first Series A Quarterly Dividend Payment Date after the first issuance of a share or fraction of a share of Series A Junior Participating Preferred Stock, in an amount per share (rounded to the nearest cent) equal to the greater of (i) \$10.00 or (ii) subject to the provision for adjustment hereinafter set forth, 100 times the aggregate per share amount of all cash dividends, and 100 times the aggregate per share amount (payable in kind) of all non-cash dividends or other distributions other than a dividend payable in shares of Common Stock or a subdivision of the outstanding shares of Common Stock (by reclassification or otherwise), declared on the Common Stock since the immediately preceding Series A Quarterly Dividend Payment Date, or, with respect to the first Series A Quarterly Dividend Payment Date, since the first issuance of any share or fraction of a share of Series A Junior Participating Preferred Stock. In the event the Corporation shall at any time after November 1, 1994 (the "Rights Declaration Date") (A) declare any dividend on Common Stock payable in shares of Common Stock, (B) subdivide the outstanding Common Stock, or (C) combine the outstanding Common Stock into a smaller number of shares, then in each such case the amount to which holders of shares of Series A Junior Participating Preferred Stock were entitled immediately prior to such event under clause (ii) of the preceding sentence shall be adjusted by multiplying such amount by a fraction the numerator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock that were outstanding immediately prior to such event.

(b) The Corporation shall declare a dividend or distribution on the Series A Junior Participating Preferred Stock as provided in paragraph (a) above immediately after it declares a dividend or distribution on the Common Stock (other than a dividend payable in shares of Common Stock); provided that, in the event no dividend or distribution shall have been declared on the Common Stock during the period between any Series A Quarterly Dividend Payment Date and the next subsequent Series A Quarterly Dividend Payment Date, a dividend of \$10.00 per share on the Series A Junior Participating Preferred Stock shall nevertheless be payable on such subsequent Series A Quarterly Dividend Payment Date.

(c) Dividends shall begin to accrue and be cumulative on outstanding shares of Series A Junior Participating Preferred Stock from the Series A Quarterly Dividend Payment Date next preceding the date of issue of such shares of Series A Junior Participating Preferred Stock, unless the date of issue of such shares is prior to the record date for the first Series A Quarterly Dividend Payment Date, in which case dividends on such shares shall begin to accrue from the date of issue of such shares, or unless the date of issue is a Series A Quarterly Dividend Payment Date or is a date after the record date for the determination of holders of shares of Series A Junior Participating Preferred Stock entitled to receive a quarterly dividend and before such Series A Quarterly Dividend Payment Date, in either of which events such dividends shall begin to accrue and be cumulative from such Series A Quarterly Dividend Payment Date. Accrued but unpaid dividends shall not bear interest.

Dividends paid on the shares of Series A Junior Participating Preferred Stock in an amount less than the total amount of such dividends at the time accrued and payable on such shares shall be allocated pro rata on a share-by-share basis among all such shares at the time outstanding. The Board of Directors may fix a record date for the determination of holders of shares of Series A Junior Participating Preferred Stock entitled to receive payment of a dividend or distribution declared thereon, which record date shall be no more than 30 days prior to the date fixed for the payment thereof.

3. **Voting Rights.** The holders of shares of Series A Junior Participating Preferred Stock shall have the following voting rights:

(a) Subject to the provision for adjustment hereinafter set forth, each share of Series A Junior Participating Preferred Stock shall entitle the holder thereof to 100 votes on all matters submitted to a vote of the stockholders of the Corporation. In the event the Corporation shall at any time after the Rights Declaration Date (i) declare any dividend on Common Stock payable in shares of Common Stock, (ii) subdivide the outstanding Common Stock, or (iii) combine the outstanding Common Stock into a smaller number of shares, then in each such case the number of votes per share to which holders of shares of Series A Junior Participating Preferred Stock were entitled immediately prior to such event shall be adjusted by multiplying such number by a fraction the numerator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock that were outstanding immediately prior to such event.

(b) Except as otherwise provided herein or by law, the holders of shares of Series A Junior Participating Preferred Stock and the holders of shares of Common Stock shall vote together as one class on all matters submitted to a vote of stockholders of the Corporation.

(c) (i) If at any time dividends on any Series A Junior Participating Preferred Stock shall be in arrears in an amount equal to six (6) quarterly dividends thereon, the occurrence of such contingency shall mark the beginning of a period (herein called a "default period") which shall extend until such time when all accrued and unpaid dividends for all previous quarterly dividend periods and for the current quarterly dividend period on all shares of Series A Junior Participating Preferred Stock then outstanding shall have been declared and paid or set apart for payment. During each default period, all holders of Series Preferred Stock, (including holders of the Series A Junior Participating Preferred Stock) with dividends in arrears in an amount equal to six (6) quarterly dividends thereon, voting as a class, irrespective of series, shall have the right to elect two (2) Directors.

(ii) During any default period, such voting right of the holders of Series A Junior Participating Preferred Stock may be exercised initially at a special meeting called pursuant to subparagraph (iii) of this Section 3(c) or at any annual meeting of stockholders, and thereafter at annual meetings of stockholders, provided that neither such voting right nor the right of the holders of any other series of Series Preferred Stock, if any, to increase, in certain cases, the authorized number of Directors shall be exercised unless the holders of ten percent (10%) in number of shares of Series Preferred Stock outstanding shall be present in person or by proxy. The absence of a quorum of the holders of Common Stock shall not affect the exercise by the holders of Series Preferred Stock of such voting right. At any meeting at which the holders of Series Preferred Stock shall exercise such voting right initially during an existing default period, they shall have the right, voting as a class, to elect Directors to fill such vacancies, if any, in the Board of Directors as may then exist up to two (2) Directors or, if such right is exercised at an annual meeting, to elect two (2) Directors. If the number which may be so elected at any special meeting does not amount to the required number, the holders of the Series Preferred Stock shall have the right to make such increase in the number of Directors as shall be necessary to permit the election by them of the required number. After the holders of the Series Preferred Stock shall have exercised their right to elect Directors in any default period and during the continuance of such period, the number of Directors

shall not be increased or decreased except by vote of the holders of Series Preferred Stock as herein provided or pursuant to the rights of any equity securities ranking senior to or pari passu with the Series A Junior Participating Preferred Stock.

(iii) Unless the holders of Series Preferred Stock shall, during an existing default period, have previously exercised their right to elect Directors, the Board of Directors may order, or any stockholder or stockholders owning in the aggregate not less than ten percent (10%) of the total number of shares of Series Preferred Stock outstanding, irrespective of series, may request, the calling of a special meeting of the holders of Series Preferred Stock, which meeting shall thereupon be called by the President, a Vice-President or the Secretary of the Corporation. Notice of such meeting and of any annual meeting at which holders of Series Preferred Stock are entitled to vote pursuant to this paragraph (c)(iii) shall be given to each holder of record of Series Preferred Stock by mailing a copy of such notice to him at his last address as the same appears on the books of the Corporation. Such meeting shall be called for a time not earlier than 20 days and not later than 60 days after such order or request or in default of the calling of such meeting within 60 days after such order or request, such meeting may be called on similar notice by any stockholder or stockholders owning in the aggregate not less than ten percent (10%) of the total number of shares of Series Preferred Stock outstanding. Notwithstanding the provisions of this paragraph (c)(iii), no such special meeting shall be called during the period within 60 days immediately preceding the date fixed for the next annual meeting of the stockholders.

(iv) In any default period, the holders of Common Stock, and other classes of stock of the Corporation if applicable, shall continue to be entitled to elect the whole number of Directors until the holders of Series Preferred Stock shall have exercised their right to elect two (2) Directors voting as a class, after the exercise of which right (A) the Directors so elected by the holders of Series Preferred Stock shall continue in office until their successors shall have been elected by such holders or until the expiration of the default period, and (B) any vacancy in the Board of Directors may (except as provided in paragraph (c)(ii) of this Section 3) be filled by vote of a majority of the remaining Directors theretofore elected by the holders of the class of stock which elected the Director whose office shall have become vacant. References in this paragraph (c) to Directors elected by the holders of a particular class of stock shall include Directors elected by such Directors to fill vacancies as provided in clause (B) of the preceding sentence.

(v) Immediately upon the expiration of a default period, (A) the right of the holders of Series Preferred Stock as a class to elect Directors shall cease, (B) the term of any Directors elected by the holders of Series Preferred Stock as a class shall terminate, and (C) the number of Directors shall be such number as may be provided for in this Certificate of Incorporation or the By-laws of the Corporation irrespective of any increase made pursuant to the provisions of paragraph (c)(ii) of this Section 3 (such number being subject, however, to change thereafter in any manner provided by law or in this Certificate of Incorporation or the By-laws of the Corporation). Any vacancies in the Board of Directors effected by the provisions of clauses (B) and (C) in the preceding sentence may be filled by a majority of the remaining Directors.

(d) Except as set forth herein or as otherwise required by applicable law, holders of Series A Junior Participating Preferred Stock shall have no special voting rights and their consent shall not be required (except to the extent they are entitled to vote with holders of Common Stock as set forth herein) for taking any corporate action.

#### **4. Certain Restrictions.**

(a) Whenever quarterly dividends or other dividends or distributions payable on the Series A Junior Participating Preferred Stock as provided in Section 2 are in arrears, thereafter and until all accrued and unpaid dividends and distributions, whether or not declared, on shares

of Series A Junior Participating Preferred Stock outstanding shall have been paid in full, the Corporation shall not

(i) declare or pay dividends on, make any other distributions on, or redeem or purchase or otherwise acquire for consideration any shares of stock ranking junior (either as to dividends or upon liquidation, dissolution or winding up) to the Series A Junior Participating Preferred Stock;

(ii) declare or pay dividends on or make any other distributions on any shares of stock ranking on a parity (either as to dividends or upon liquidation, dissolution or winding up) with the Series A Junior Participating Preferred Stock, except dividends paid ratably on the Series A Junior Participating Preferred Stock and all such parity stock on which dividends are payable or in arrears in proportion to the total amounts to which the holders of all such shares are then entitled;

(iii) redeem or purchase or otherwise acquire for consideration shares of any stock ranking on a parity (either as to dividends or upon liquidation, dissolution or winding up) with the Series A Junior Participating Preferred Stock, provided that the Corporation may at any time redeem, purchase or otherwise acquire shares of any such parity stock in exchange for shares of any stock of the Corporation ranking junior (either as to dividends or upon dissolution, liquidation or winding up) to the Series A Junior Participating Preferred Stock;

(iv) purchase or otherwise acquire for consideration any shares of Series A Junior Participating Preferred Stock, or any shares of stock ranking on a parity with the Series A Junior Participating Preferred Stock, except in accordance with a purchase offer made in writing or by publication (as determined by the Board of Directors) to all holders of such shares upon such terms as the Board of Directors, after consideration of the respective annual dividend rates and other relative rights and preferences of the respective series and classes, shall determine in good faith will result in fair and equitable treatment among the respective series or classes.

(b) The Corporation shall not permit any subsidiary of the Corporation to purchase or otherwise acquire for consideration any shares of stock of the Corporation unless the Corporation could, under paragraph (a) of this Section 4, purchase or otherwise acquire such shares at such time and in such manner.

5. *Reacquired Shares.* Any shares of Series A Junior Participating Preferred Stock purchased or otherwise acquired by the Corporation in any manner whatsoever shall be retired and cancelled promptly after the acquisition thereof. All such shares shall upon their cancellation become authorized but unissued shares of Series Preferred Stock and may be reissued as part of a new series of Series Preferred Stock to be created by resolution or resolutions of the Board of Directors, subject to the conditions and restrictions on issuance set forth herein.

#### 6. *Liquidation, Dissolution or Winding Up.*

(a) Upon any liquidation (voluntary or otherwise), dissolution or winding up of the Corporation, no distribution shall be made to the holders of shares of stock ranking junior (either as to dividends or upon liquidation, dissolution or winding up) to the Series A Junior Participating Preferred Stock unless, prior thereto, the holders of shares of Series A Junior Participating Preferred Stock shall have received \$100 per share, plus an amount equal to accrued and unpaid dividends and distributions thereon, whether or not declared, to the date of such payment (the "Series A Liquidation Preference"). Following the payment of the full amount of the Series A Liquidation Preference, no additional distributions shall be made to the holders of shares of Series A Junior Participating Preferred Stock unless, prior thereto, the holders of shares of Common Stock shall have received an amount per share (the "Common Adjustment") equal to the quotient obtained by dividing (i) the Series A Liquidation Preference by (ii) 100 (as appropriately adjusted as set forth in subparagraph C

below to reflect such events as stock splits, stock dividends and recapitalizations with respect to the Common Stock) (such number in clause (ii), the "Adjustment Number"). Following the payment of the full amount of the Series A Liquidation Preference and the Common Adjustment in respect of all outstanding shares of Series A Junior Participating Preferred Stock and Common Stock, respectively, holders of Series A Junior Participating Preferred Stock and holders of shares of Common Stock shall receive their ratable and proportionate share of the remaining assets to be distributed in the ratio of the Adjustment Number to 1 with respect to such Preferred Stock and Common Stock, on a per share basis, respectively.

(b) In the event, however, that there are not sufficient assets available to permit payment in full of the Series A Liquidation Preference and the liquidation preferences of all other series of preferred stock, if any, which rank on a parity with the Series A Junior Participating Preferred Stock, then such remaining assets shall be distributed ratably to the holders of such parity shares in proportion to their respective liquidation preferences. In the event, however, that there are not sufficient assets available to permit payment in full of the Common Adjustment, then such remaining assets shall be distributed ratably to the holders of Common Stock.

(c) In the event the Corporation shall at any time after the Rights Declaration Date (i) declare any dividend on Common Stock payable in shares of Common Stock, (ii) subdivide the outstanding Common Stock, or (iii) combine the outstanding Common Stock into a smaller number of shares, then in each such case the Adjustment Number in effect immediately prior to such event shall be adjusted by multiplying such Adjustment Number by a fraction the numerator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock that were outstanding immediately prior to such event.

**7. Consolidation, Merger, etc.** In case the Corporation shall enter into any consolidation, merger, combination or other transaction in which the shares of Common Stock are exchanged for or changed into other stock or securities, cash and/or any other property, then in any such case the shares of Series A Junior Participating Preferred Stock shall at the same time be similarly exchanged or changed in an amount per share (subject to the provision for adjustment hereinafter set forth) equal to 100 times the aggregate amount of stock, securities, cash and/or any other property (payable in kind), as the case may be, into which or for which each share of Common Stock is changed or exchanged. In the event the Corporation shall at any time after the Rights Declaration Date (a) declare any dividend on Common Stock payable in shares of Common Stock, (b) subdivide the outstanding Common Stock, or (c) combine the outstanding Common Stock into a smaller number of shares, then in each such case the amount set forth in the preceding sentence with respect to the exchange or change of shares of Series A Junior Participating Preferred Stock shall be adjusted by multiplying such amount by a fraction the numerator of which is the number of shares of Common Stock outstanding immediately after such event and the denominator of which is the number of shares of Common Stock that were outstanding immediately prior to such event.

**8. No Redemption.** The shares of Series A Junior Participating Preferred Stock shall not be redeemable.

**9. Ranking.** The Series A Junior Participating Preferred Stock shall rank junior to all other series of the Corporation's Series Preferred Stock as to the payment of dividends and the distribution of assets, unless the terms of any such series shall provide otherwise.

**10. Amendment.** This Certificate of Incorporation shall not be further amended in any manner which would materially alter or change the powers, preferences or special rights of the Series A Junior Participating Preferred Stock so as to affect them adversely without the affirmative vote of the holders of two-thirds or more of the outstanding shares of Series A Junior Participating Preferred Stock, voting separately as a class.

11. **Fractional Shares.** Series A Junior Participating Preferred Stock may be issued in fractions of a share which shall entitle the holder, in proportion to such holder's fractional shares, to exercise voting rights, receive dividends, participate in distributions and to have the benefit of all other rights of holders of Series A Junior Participating Preferred Stock.

## **II. COMMON STOCK**

**A. Dividends.** Subject to all of the rights of the Series Preferred Stock, dividends may be paid upon the Common Stock as and when declared by the Board of Directors out of funds legally available for the payment of dividends.

**B. Liquidation Rights.** In the event of any liquidation, dissolution or winding-up of the Corporation, whether voluntary or involuntary, and after the holders of the Series Preferred Stock shall have been paid in full amounts to which they respectively shall be entitled, or an amount sufficient to pay the aggregate amount to which such holders shall be entitled shall have been deposited in trust with a bank or trust company having its principal office in the Borough of Manhattan, City, County and State of New York, having a capital, undivided profits and surplus aggregating at least \$5,000,000, for the benefit of the holders of the Series Preferred Stock, the remaining net assets of the Corporation shall be distributed pro rata to the holders of the Common Stock.

**C. Voting Rights.** Except as otherwise expressly provided with respect to the Series Preferred Stock and except as otherwise may be required by law, the Common Stock shall have the exclusive right to vote for the election of directors and for all other purposes and each holder of Common Stock shall be entitled to one vote for each share held.

## **ARTICLE V.**

### **A. Board of Directors of the Corporation.**

1. **General Provisions.** The business and affairs of the Corporation shall be managed under the direction of the Board of Directors. The exact number of directors shall be fixed from time to time by, or in the manner provided in, the By-Laws of the Corporation and may be increased or decreased as therein provided. Directors of the Corporation need not be elected by ballot unless required by the By-Laws.

2. **Classification of Board of Directors.** The directors shall be divided into three classes. Each such class shall consist, as nearly as may be possible, of one-third of the total number of directors, and any remaining directors shall be included within such group or groups as the Board of Directors shall designate. At the annual meeting of stockholders in 1994, a class of directors shall be elected for a one-year term, a class of directors for a two-year term and a class of directors for a three-year term. At each succeeding annual meeting of stockholders, beginning in 1995, successors to the class of directors whose term expires at that annual meeting shall be elected for a three-year term. If the number of directors is changed, any increase or decrease shall be apportioned among the classes so as to maintain the number of directors in each class as nearly equal as possible, but in no case shall a decrease in the number of directors shorten the term of any incumbent director. A director may be removed from office for cause only and, subject to such removal, death, resignation, retirement or disqualification, shall hold office until the annual meeting for the year in which his term expires and until his successor shall be elected and qualify. No alteration, amendment or repeal of this Article V or the By-Laws of the Corporation shall be effective to shorten the term of any director holding office at the time of such alteration, amendment or repeal, to permit any such director to be removed without cause, or to increase the number of directors in any class or in the aggregate from that existing at the time of such alteration, amendment or repeal until the expiration of the terms of office of all directors then holding office, unless (i) in the case of this Article V, such alteration, amendment or repeal has been approved by the holders of all shares of stock entitled to vote thereon, or (ii)

in the case of the By-Laws, such alteration, amendment or repeal has been approved by either the holders of all shares entitled to vote thereon or by a vote of a majority of the entire Board of Directors.

**3. Directors Appointed by a Specific Class of Stockholders.** To the extent that any holders of any class or series of stock other than Common Stock issued by the Corporation shall have the separate right, voting as a class or series, to elect directors, the directors elected by such class or series shall be deemed to constitute an additional class of directors and shall have a term of office for one year or such other period as may be designated by the provisions of such class or series providing such separate voting right to the holders of such class or series of stock, and any such class of directors shall be in addition to the classes designated above.

## ARTICLE VI.

**A. General Provisions.** The following provisions are hereby adopted for the purpose of defining, limiting and regulating the powers of the Corporation and of its directors and stockholders:

**1. Amendments to the Certificate of Incorporation.** Subject to the provisions of applicable law, the Corporation reserves the right from time to time to make any amendment to its Certificate of Incorporation, now or hereafter authorized by law, including any amendment which alters the contract rights as expressly set forth therein, of any outstanding stock.

**2. Amendments to the By-Laws.** The Board of Directors is expressly authorized to adopt, alter and repeal the By-Laws of the Corporation in whole or in part at any regular or special meeting of the Board of Directors, by vote of a majority of the entire Board of Directors. Except where this Certificate of Incorporation otherwise requires a higher vote, the By-Laws may also be adopted, altered or repealed in whole or in part at any annual or special meeting of the stockholders by the affirmative vote of three-fourths of the shares of the Corporation outstanding and entitled to vote thereon.

**3. No Preemptive Rights.** No holder of any class of stock of the Corporation, whether now or hereafter authorized or outstanding, shall have any preemptive, preferential or other right to subscribe for or purchase any class of the Corporation's stock, whether now or hereafter authorized or outstanding, which it may at any time issue or sell, or to subscribe for or purchase any notes, debentures, bonds or other securities which it may at any time issue or sell, whether or not the same be convertible into or exchangeable for or carry options or warrants to purchase shares of any class of the Corporation's stock or other securities, or to receive or purchase any warrants or options which may be issued or granted evidencing the right to purchase any such stock or other securities, it being intended by this Section 3 that all preemptive rights of any kind applicable to securities of the Corporation are eliminated.

**4. Vote Required to Take Action; Action by Written Consent.** Except as otherwise provided in this Certificate of Incorporation and except as otherwise provided by applicable law, the Corporation may take or authorize any action upon the affirmative vote of the majority of shares present in person or represented by proxy at the meeting and entitled to vote on the subject matter thereof. Action shall be taken by stockholders of the Corporation only at annual or special meetings of stockholders, and stockholders may act in lieu of a meeting only by unanimous written consent.

**5. Compensation of Directors.** The Board of Directors may determine from time to time the amount and type of compensation which shall be paid to its members for service on the Board of Directors. The Board of Directors shall also have the power, in its discretion, to provide for and to pay to directors rendering services to the Corporation not ordinarily rendered by directors, as such, special compensation appropriate to the value of such services, as determined by the Board from time to time.

6. **Interested Transactions.** Any director or officer individually, or any partnership of which any director or officer may be a member, or any corporation or association of which any director or officer may be an officer, director, trustee, employee or stockholder, may be a party to, or may be pecuniarily or otherwise interested in, any contract or transaction of the Corporation, and in the absence of fraud no contract or other transaction shall be thereby affected or invalidated. Any director of the Corporation who is so interested, or who is also a director, officer, trustee, employee or stockholder of such other corporation or association or a member of such partnership which is so interested, may be counted in determining the existence of a quorum at any meeting of the Board of Directors of the Corporation which shall authorize any such contract or transaction, and may vote thereat to authorize any such contract or transaction, with like force and effect as if he were not such director, officer, trustee, employee or stockholder of such other corporation or association or not so interested or a member of a partnership so interested; provided that in case a director, or a partnership, corporation or association of which a director is a member, officer, director, trustee or employee is so interested, such fact shall be disclosed or shall have been known to the Board of Directors or a majority thereof. This paragraph shall not be construed to invalidate any such contract or transaction which would otherwise be valid under the common and statutory law applicable thereto.

7. **Indemnification.** The Corporation shall indemnify (a) its directors to the fullest extent permitted by the laws of the State of Delaware now or hereafter in force, including the advancement of expenses under the procedures provided by such laws, (b) all of its officers to the same extent as it shall indemnify its directors, and (c) its officers who are not directors to such further extent as shall be authorized by the Board of Directors and be consistent with law. Subject only to any limitations prescribed by the laws of the State of Delaware now or hereafter in force, the foregoing shall not limit the authority of the Corporation to indemnify the directors, officers and other employees and agents of this Corporation consistent with law and shall not be deemed to be exclusive of any rights to which those indemnified may be entitled as a matter of law or under any resolution, By-Law provision, or agreement.

8. **Court-Ordered Meetings of Creditors and/or Stockholders.** Whenever a compromise or arrangement is proposed between this Corporation and its creditors or any class of them and/or between this Corporation and its stockholders or any class of them, any court of equitable jurisdiction within the State of Delaware may, on the application in a summary way of this Corporation or of any creditor or stockholder thereof, or on the application of any receiver or receivers appointed for this Corporation under the provisions of Section 291 of Title 8 of the Delaware Code or on the application of trustees in dissolution or of any receiver or receivers appointed for this Corporation under the provisions of Section 279 of Title 8 of the Delaware Code order a meeting of the creditors or class of creditors, and/or of the stockholders or class of stockholders of this Corporation, as the case may be, to be summoned in such manner as such court directs. If a majority in number representing three-fourths in value of the creditors or class of creditors, and/or of the stockholders or class of stockholders of this Corporation, as the case may be, agree to any compromise or arrangement and to any reorganization of this Corporation as a consequence of such compromise or arrangement, the said compromise or arrangement and the said reorganization shall, if sanctioned by the court to which such application has been made, be binding on all the creditors or class of creditors, and/or on all the stockholders or class of stockholders, of this Corporation, as the case may be, and also on this Corporation.

9. **Liability of Directors.** To the fullest extent permitted by Delaware statutory or decisional law, as amended or interpreted, no director of this Corporation shall be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. This Section 9 does not affect the availability of equitable remedies for breach of fiduciary duties.

## ARTICLE VII.

### A. Vote Required for Certain Business Combinations

1. ***Voting Requirements.*** In addition to any vote otherwise required by law or this Certificate of Incorporation, a Business Combination (such term, and certain other capitalized terms referred to in this Article VII, as defined in Section 3 of this Article VII) shall be recommended by the Board of Directors and approved by the affirmative vote of at least:

- (a) 80 percent of the votes entitled to be cast by outstanding shares of voting stock of the Corporation, voting together as a single voting group; and
- (b) Two-thirds of the votes entitled to be cast by holders of voting stock other than voting stock held by an Interested Stockholder who is (or whose Affiliate is) a party to the Business Combination or an Affiliate or Associate of the Interested Stockholder, voting together as a single voting group.

### 2. *When Voting Requirements Not Applicable.*

(a) The vote required by Section 1 of this Article VII does not apply to a Business Combination if each of the following conditions is met:

(i) The aggregate amount of the cash and the Market Value as of the Valuation Date of consideration other than cash to be received per share by holders of common stock in such Business Combination is at least equal to the highest of the following:

(A) The highest per share price (including any brokerage commissions, transfer taxes and soliciting dealers' fees) paid by the Interested Stockholder for any shares of common stock of the same class or series acquired by it: (x) within the 2 year period immediately prior to the Announcement Date of the proposal of the Business Combination; or (y) in the transaction in which it became an Interested Stockholder, whichever is higher; or

(B) The Market Value per share of common stock of the same class or series on the Announcement Date or on the Determination Date, whichever is higher; or

(C) The price per share equal to the Market Value per share of common stock of the same class or series determined pursuant to subparagraph (i)(B) of this paragraph (a), multiplied by the fraction of: (x) the highest per share price (including any brokerage commissions, transfer taxes and soliciting dealers' fees) paid by the Interested Stockholder for any shares of common stock of the same class or series acquired by it within the 2 year period immediately prior to the Announcement Date, over (y) the Market Value per share of common stock of the same class or series on the first day in such 2 year period on which the Interested Stockholder acquired any shares of common stock.

(ii) The aggregate amount of the cash and the Market Value as of the Valuation Date of consideration other than cash to be received per share by holders of shares of any class or series of outstanding stock other than Common Stock is at least equal to the highest of the following (whether or not the Interested Stockholder has previously acquired any shares of a particular class or series of stock):

(A) The highest per share price (including any brokerage commissions, transfer taxes and soliciting dealers' fees) paid by the Interested Stockholder for any shares of such class of stock acquired by it: (x) within the 2 year period immediately prior to the Announcement Date of the proposal of the Business Combination; or (y) in the transaction in which it became an Interested Stockholder, whichever is higher; or

(B) The highest preferential amount per share to which the holders of shares of such class of stock are entitled in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation; or

(C) The Market Value per share of such class of stock on the Announcement Date or on the Determination Date, whichever is higher; or

(D) The price per share equal to the Market Value per share of such class of stock determined pursuant to subparagraph (ii)(B) of this paragraph (a), multiplied by the fraction of: (x) the highest per share price (including any brokerage commissions, transfer taxes and soliciting dealers' fees) paid by the Interested Stockholder for any shares of any class of Voting Stock acquired by it within the 2 year period immediately prior to the Announcement Date, over (y) the Market Value per share of the same class of voting stock on the first day in such 2 year period on which the Interested Stockholder acquired any shares of the same class of Voting Stock.

(iii) The consideration to be received by holders of any class or series of outstanding stock is to be in cash or in the same form as the Interested Stockholder has previously paid for shares of the same class or series of stock. If the Interested Stockholder has paid for shares of any class of stock with varying forms of consideration, the form of consideration for such class of stock shall be either cash or the form used to acquire the largest number of shares of such class or series of stock previously acquired by it.

(iv) After the Interested Stockholder has become an Interested Stockholder and prior to the consummation of such Business Combination:

(A) There shall have been: (x) no reduction in the annual rate of dividends paid on any class or series of stock of the Corporation that is not preferred stock (except as necessary to reflect any subdivision of the stock); (y) an increase in such annual rate of dividends as necessary to reflect any reclassification (including any reverse stock split), recapitalization, reorganization or any similar transaction which has the effect of reducing the number of outstanding shares of the stock; and (z) the Interested Stockholder did not become the beneficial owner of any additional shares of stock of the Corporation except as part of the transaction which resulted in such Interested Stockholder becoming an Interested Stockholder or by virtue of proportionate stock splits or stock dividends.

(B) The provisions of subparagraphs (x) and (y) of subparagraph (iv)(A) do not apply if no Interested Stockholder or an Affiliate or Associate of the Interested Stockholder voted as a director of the Corporation in a manner inconsistent with such sub-subparagraphs and the Interested Stockholder, within 10 days after any act or failure to act inconsistent with such sub-subparagraphs, notifies the Board of Directors of the Corporation in writing that the Interested Stockholder disapproves thereof and requests in good faith that the Board of Directors rectify such act or failure to act.

(v) After the Interested Stockholder has become an Interested Stockholder, the Interested Stockholder may not have received the benefit, directly or indirectly (except proportionately as a stockholder), of any loans, advances, guarantees, pledges or other financial assistance or any tax credits or other tax advantages provided by the Corporation or any of its Subsidiaries, whether in anticipation of or in connection with such Business Combination or otherwise.

(b) The requirements of Section 1 of this Article VII do not apply to Business Combinations that, as to specifically identified Interested Stockholders or their Affiliates, have been approved or exempted therefrom by resolution of the Board of Directors of the Corporation at any time prior to the time that the Interested Stockholder first became an Interested Stockholder. If the Board of Directors so provides, the resolution shall be subject to approval of the stockholders in the manner and by the vote specified in the resolution.

3. **Definitions.** In this Article VII, the following words have the meanings indicated:

(a) "Affiliate," including the term "affiliated person," means a person that directly, or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, a specified person

(b) "Announcement Date" means the first general public announcement of the proposal or intention to make a proposal of the Business Combination or its first communication generally to stockholders of the Corporation, whichever is earlier;

(c) "Associate," when used to indicate a relationship with any person, means:

(i) Any corporation or organization (other than the Corporation or a Subsidiary of the Corporation) of which such person is an officer, director, or partner or is, directly or indirectly, the beneficial owner of 10 percent or more of any class of Equity Securities;

(ii) Any trust or other estate in which such person has a substantial beneficial interest or as to which such person serves as trustee or in a similar fiduciary capacity; and

(iii) Any relative or spouse of such person, or any relative of such spouse, who has the same home as such person or who is a director or officer of the Corporation or any of its Affiliates.

(d) "Beneficial Owner," when used with respect to any Voting Stock, means a person:

(i) That, individually or with any of its Affiliates or Associates, beneficially owns Voting Stock, directly or indirectly; or

(ii) That, individually or with any of its Affiliates or Associates, has:

(A) The right to acquire Voting Stock (whether such right is exercisable immediately or only after the passage of time), pursuant to any agreement, arrangement, or understanding or upon the exercise of conversion rights, exchange rights, warrants or options, or otherwise; or

(B) The right to vote Voting Stock pursuant to any agreement, arrangement, or understanding; or

(iii) That has any agreement, arrangement, or understanding for the purpose of acquiring, holding, voting or disposing of Voting Stock with any other person that beneficially owns, or whose Affiliates or Associates beneficially own, directly or indirectly, such shares of Voting Stock.

(e) "Business Combination" means:

(i) Unless the merger, consolidation, or share exchange does not alter the contract rights of the stock as expressly set forth in this Certificate of Incorporation or change or convert in whole or in part the outstanding shares of stock of the Corporation, any merger or consolidation of the Corporation or any Subsidiary with (A) any Interested Stockholder or (B) any other corporation (whether or not itself an Interested Stockholder) which is, or after the merger or consolidation, would be, an Affiliate of an Interested Stockholder that was an Interested Stockholder prior to the transaction.

(ii) Any sale, lease, transfer or other disposition, other than in the ordinary course of business, in one transaction or a series of transactions in any 12-month period, to any Interested Stockholder or any Affiliate of any Interested Stockholder (other than the Corporation or any of its Subsidiaries) of any assets of the Corporation or any Subsidiary

having, measured at the time the transaction or transactions are approved by the Board of Directors of the Corporation, an aggregate book value as of the end of the Corporation's most recently ended fiscal quarter of 10 percent or more of the total Market Value of the outstanding stock of the Corporation or of its net worth as of the end of its most recently ended fiscal quarter;

(iii) The issuance or transfer by the Corporation, or any Subsidiary, in one transaction or a series of transactions, of any Equity Securities of the Corporation or any Subsidiary which have an aggregate Market Value of 5 percent or more of the total Market Value of the outstanding stock of the Corporation to any Interested Stockholder or any Affiliate of any Interested Stockholder (other than the Corporation or any of its Subsidiaries) except pursuant to the exercise of warrants or rights to purchase securities offered pro rata to all holders of the Corporation's voting stock or any other method affording substantially proportionate treatment to the holders of Voting Stock;

(iv) The adoption of any plan or proposal for the liquidation or dissolution of the Corporation in which anything other than cash will be received by an Interested Stockholder or any Affiliate of any Interested Stockholder; or

(v) Any reclassification of securities (including any reverse stock split), or recapitalization of the Corporation, or any merger or consolidation, of the Corporation with any of its Subsidiaries which has the effect, directly or indirectly, in one transaction or a series of transactions, of increasing by 5 percent or more of the total number of outstanding shares, the proportionate amount of the outstanding shares of any class of Equity Securities of the Corporation or any Subsidiary which is directly or indirectly owned by any Interested Stockholder or any Affiliate of any Interested Stockholder.

(f) "Common Stock" means any stock other than preferred or preference stock.

(g) "Control," including the terms "controlling," "controlled by" and "under common control with," means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities, by contract, or otherwise, and the beneficial ownership of 10 percent or more of the votes entitled to be cast by a corporation's voting stock creates a presumption of control.

(h) "Determination Date" means the date on which an Interested Stockholder first became an Interested Stockholder;

(i) "Equity Security" means:

(i) Any stock or similar security, certificate of interest, or participation in any profit sharing agreement, voting trust certificate, or certificate of deposit for an equity security;

(ii) Any security convertible, with or without consideration, into an equity security, or any warrant or other security carrying any right to subscribe to or purchase an equity security; or

(iii) Any put, call, straddle, or other option or privilege of buying an equity security from or selling an equity security to another without being bound to do so.

(j) "Interested Stockholder" means any person (other than the Corporation or any Subsidiary) that:

(i) (A) Is the beneficial owner, directly or indirectly, of 10 percent or more of the voting power of the outstanding voting stock of the Corporation; or

(B) Is an Affiliate of the Corporation and at any time within the 2 year period immediately prior to the date in question was the beneficial owner, directly or indirectly, of 10 percent or more of the Voting Power of the then outstanding voting stock of the Corporation.

(ii) For the purpose of determining whether a person is an Interested Stockholder, the number of shares of Voting Stock deemed to be outstanding shall include shares deemed owned by the person through application of subsection (d) of this section but may not include any other shares of Voting Stock which may be issuable pursuant to any agreement, arrangement, or understanding, or upon exercise of conversion rights, warrants or options, or otherwise.

(k) "Market Value" means:

(i) In the case of stock, the highest closing sale price during the 30 day period immediately preceding the date in question of a share of such stock on the composite tape for New York Stock Exchange listed stocks, or, if such stock is not quoted on the composite tape, on the New York Stock Exchange, or if such stock is not listed on such exchange, on the principal United States securities exchange registered under the Securities Exchange Act of 1934 on which such stock is listed, or, if such stock is not listed on any such exchange, the highest closing bid quotation with respect to a share of such stock during the 30 day period preceding the date in question on the National Association of Securities Dealers, Inc. automated quotations system or any system then in use, or if no such quotations are available, the fair market value on the date in question of a share of such stock as determined by the Board of Directors of the Corporation in good faith; and

(ii) In the case of property other than cash or stock, the fair market value of such property on the date in question as determined by the Board of Directors of the Corporation in good faith.

(l) "Subsidiary" means any corporation of which voting stock having a majority of the votes entitled to be cast is owned, directly or indirectly, by the Corporation.

(m) "Valuation Date" means:

(i) For a Business Combination voted upon by stockholders, the later of the day prior to the date of the stockholders' vote or the day 20 days prior to the consummation of the Business Combination; and

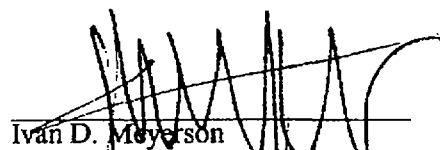
(ii) For a Business Combination not voted upon by stockholders, the date of the consummation of the Business Combination.

(n) "Voting Stock means shares of capital stock of the Corporation entitled to vote generally in the election of directors.

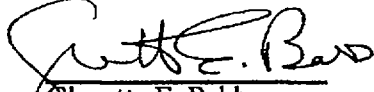
IN WITNESS WHEREOF, the Corporation has caused this Restated Certificate of Incorporation to be executed and attested to by its duly authorized officers this 8<sup>th</sup> day of November, 2001.

McKESSON CORPORATION

By:

  
Ivan D. Meyerson  
Senior Vice President, General  
Counsel and Corporate Secretary

Attest:

  
Glenette E. Babb  
Assistant Secretary

CERTIFICATE OF AMENDMENT  
OF  
RESTATED  
CERTIFICATE OF INCORPORATION  
OF  
McKESSON CORPORATION

STATE OF DELAWARE  
SECRETARY OF STATE  
DIVISION OF CORPORATIONS  
FILED 09:00 AM 08/01/2002  
020492805 - 2417015

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Pursuant to Sections 222 and 242 of  
the General Corporation Law of the  
State of Delaware

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McKesson Corporation (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, DOES HEREBY CERTIFY:

FIRST: At a meeting of the Board of Directors of the Corporation duly called and held on May 29, 2002, resolutions were duly adopted setting forth a proposed amendment to the Restated Certificate of Incorporation of the Corporation, declaring such amendment to be advisable and directing that such amendment be submitted to the stockholders of the Corporation for approval at its Annual Meeting of Stockholders to be held on July 31, 2002. Such resolutions recommended that the first paragraph of Article IV of the Restated Certificate of Incorporation of the Corporation be amended and restated in its entirety as follows:

"The total number of shares of stock of all classes which the Corporation has authority to issue is 900,000,000 shares, divided into 100,000,000 shares of Preferred Stock, par value \$0.01 per share (herein called the "Series Preferred Stock") and 800,000,000 shares of Common Stock, par value \$0.01 per share (herein called "Common Stock"). The aggregate par value of all shares is \$9,000,000."

SECOND: At the Annual Meeting of Stockholders of the Corporation duly called and held on July 31, 2002, the affirmative vote of a majority of the votes permitted to be cast by the holders of the outstanding shares of the Corporation's common stock, par value \$0.01 per share, was obtained in favor of such amendment with respect to Article IV.

THIRD: That the foregoing amendment was duly adopted in accordance with the provisions of Sections 222 and 242 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, McKesson Corporation has caused this  
Certificate to be executed in its corporate name this 1<sup>st</sup> day of August, 2002.

McKESSON CORPORATION

By: 

Name: Ivan D. Meyerson

Title: Senior Vice President, General  
Counsel and Corporate Secretary

# **Attachment “D”**

BoD  
5/6/87

Reincarnation

REINCORP-  
ORATION  
PROPOSAL

At the Chairman's request, Messrs. Seelenfreund and Meyerson commented on recent developments in the Maryland legislature which have given rise to management's recommendation that consideration be given by the Board to a possible change of the Corporation's domicile from Maryland to Delaware, primarily to take advantage of certain provisions of Delaware law, such as the power of stockholders to limit the liability of directors.

Mr. Small commented on certain legal considerations of the proposed reincorporation; factors that influence the choice of a state for reincorporation, including the quality and responsiveness of the courts, legislature and local bars, as well as the experience of the courts in the business area, and the flexibility and current nature of corporation statutes and taxation issues; and the rationale by which Morrison and Foerster has arrived at the suggested choice of Delaware as the state for possible reincorporation of McKesson.

Mr. Small then outlined the legal framework and steps required to accomplish a possible reincorporation in Delaware, including the sequence of action that would be required of the Board. A discussion ensued during which management and Mr. Small responded to various questions posed by the Directors.

After further discussion of certain technical aspects of the proposed reincorporation, including the need for approval of the possible reincorporation by the Corporation's stockholders at the 1987 Annual Meeting, on motion duly made and seconded, the following resolutions were adopted:

RESOLVED, that this Corporation undertake a Plan of Reorganization pursuant to which a new Delaware holding company will be established, and this Corporation will become a wholly-owned subsidiary of the Delaware holding company; and

FURTHER RESOLVED, that the officers of this Corporation be and each of them hereby is authorized, empowered and directed to take such actions and execute such documents as they deem necessary or appropriate to carry out the purposes of the foregoing resolution.

# **Attachment “E”**

BoJ  
6/3/87

REINCORP-  
ORATION  
PROPOSAL

Referring to the approval given by the Board at its last meeting of a proposal to change the Corporation's domicile from Maryland to Delaware, Mr. Harlan directed the Board's attention to resolutions included in the Director's meeting books, which are now required in order to approve the proposed Plan and Agreement of Reorganization and the related Merger Agreement (copies of which documents were included in an appendix to the proxy materials mailed to the Directors for review in advance of this meeting) pursuant to which the reincorporation is to be accomplished, and

to submit the same for approval by the Corporation's stockholders at the 1987 Annual Meeting. After discussion, on motion duly made and seconded, the following preambles and resolutions were approved:

WHEREAS, there has been presented to the Board of Directors of this Corporation a Plan and Agreement of Reorganization (the "Reorganization Plan") between this Corporation, McKesson Holding Company and McKesson Acquisition Company, containing as Exhibit C thereto a Plan and Agreement of Merger between the same parties (the "Merger Agreement"); and

WHEREAS, the Board of Directors deems it to be advisable and in the best interest of the Corporation to enter into the Reorganization Plan and the Merger Agreement.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of this Corporation does hereby approve the proposed Reorganization Plan and the Merger Agreement, the terms and conditions thereof, and the mode of carrying them into effect; and

FURTHER RESOLVED, that the Chairman of the Board, the President and any Vice President of this Corporation be and they hereby are authorized and directed to execute and acknowledge for and on behalf of this Corporation the Reorganization Plan and the Merger Agreement in substantially the form presented to and considered at this meeting, with such changes as may be determined by the President, Chairman of the Board or any Vice President of this Corporation and the Secretary and any Assistant Secretary of this Corporation be and they hereby are authorized to attest such execution; and

FURTHER RESOLVED, that for the purpose of securing approval by the holders of the Common Stock and Cumulative Preferred Stock, Series A (Convertible) (the "Series A Preferred") of this Corporation of the Reorganization Plan and the Merger Agreement, the Board of Directors is authorized (i) to distribute to such shareholders a Proxy Statement substantially in the form presented to the Board of Directors with the recommendation of the Directors that such shareholders approve said Reorganization Plan and Merger Agreement,

and (ii) to submit said Reorganization Plan and Merger Agreement to such shareholders at the annual meeting of shareholders to be held on July 22, 1987, at 10:00 a.m. at the California Masonic Temple Auditorium, San Francisco, California, or at such other time and place as the Board of Directors may establish, for the purpose of considering and voting upon said Reorganization Plan and Merger Agreement; and

FURTHER RESOLVED, that the President, Chairman of the Board, the Secretary and any Vice President of this Corporation be and each of them hereby is authorized, empowered and directed to execute such other documents and take such other actions as may be necessary or appropriate to carry out the purpose of the foregoing resolutions including, without limitation, the execution of Articles of Merger and of Supplemental Indentures in connection with (i) that certain First Supplemental Indenture, dated as of October 29, 1985, between this Corporation, Mass Merchandisers, Inc. and Centerre Trust Company of St. Louis, (ii) that certain Indenture, dated as of June 15, 1981, between the Corporation and Bank of America National Trust and Savings Association, and (iii) that certain Indenture, dated October 15, 1969, between this Corporation and First National City Bank.

# Attachment “F”

BoD  
4/22/87

REINCOR-  
PORATION -  
ENABLING  
RESOLUTIONS

Referring to approval by the stockholders of the Corporation at the Annual Meeting earlier today of the proposal to change the Corporation's domicile from Maryland to Delaware, Mr. Harlan advised that it was now appropriate and in order for the Board to take certain actions to facilitate the reincorporation and to implement the previously approved Plan and Agreement of Reorganization and the related Merger Agreement between this Corporation, McKesson Holding Company, a Delaware corporation ("New Delaware Parent") and McKesson Acquisition Company. In this regard, he directed the Board's attention to a resolution included in the Directors' meeting books that is required to effect the transfer of the realty and personalty of this Corporation's Information Technology Division to the New Delaware Parent. After discussion, on motion duly made and seconded, it was

RESOLVED, that the Corporation be, and hereby is, authorized to make a contribution to the capital of its wholly-owned subsidiary, McKesson Holding Company, a Delaware corporation, consisting of all of the stock of Foremost Trading Company (and the stock or assets of any other wholly-owned subsidiary) all as may be necessary or appropriate in connection with implementing the previously approved Reorganization Plan and Merger Agreement as determined by the officers of this Corporation with the advice of counsel.

Mr. Harlan reminded the Directors that at the Effective Time of the Merger Agreement, which is expected to be July 31, 1987, this Corporation will become a wholly-owned subsidiary of the New Delaware Parent and the current executive officers and Directors of this Corporation will become executive officers and Directors of the New Delaware Parent. In this regard, he stated that it would be appropriate for the Board to adopt certain enabling resolutions to provide that immediately after the Effective Time of the Merger Agreement, the By-laws of this Corporation be amended to fix the authorized number of Directors at five; the resignations of the current Directors of this Corporation be accepted and new Directors designated to take office at the time of such resignations; the persons designated to serve as officers of the Corporation be elected, and the Articles of Restatement of the Charter of this Corporation, in the form presented to this meeting, be filed with the appropriate authorities in the State of Maryland. After discussion, on motion duly made and seconded, the following resolutions were adopted:

RESOLVED, that immediately after the Effective Time of the Plan and Agreement of Merger, dated as of June 15, 1987, between McKesson Corporation, McKesson Acquisition Company and McKesson Holding Company, Section 2 of Article III of the By-Laws of this Corporation be and it hereby is amended to read as follows:

"Section 2. Number and Term of Office. The number of directors of the Corporation shall be fixed from time to time by these By-laws, but in no event shall be less than three (3). Until these By-laws are further amended, the number of directors shall be five."

FURTHER RESOLVED, that the resignations of Leslie L. Luttgens, Roy B. Miner, Malcolm Toon, Robert R. Dockson, James R. Harvey, Joseph R. Rensch, Ezra Solomon, J. Paul Sticht, George M. Keller and Neil E. Harlan as directors of this Corporation are accepted to take effect immediately after the Effective Time of the aforesaid Plan and Agreement of Merger and Thomas W. Field, Jr., Kenneth C. Hicken, Rex R. Malson, Alan J. Seelenfreund and John S. Wheaton be and they hereby are elected directors of the Corporation, to take office at the time of such resignations, to fill vacancies on the Board of Directors of this Corporation, and to hold office for the ensuing year and until their successors are elected; and

FURTHER RESOLVED, that immediately after the Effective Time of the aforesaid Plan and Agreement of Merger the following persons be and they hereby are elected as officers of the Corporation, to hold office for the ensuing year and until their successors are elected:

| <u>Name</u>           | <u>Title</u>  |
|-----------------------|---|
| Thomas W. Field, Jr.  | Chairman, President and<br>Chief Executive Officer      |
| Kenneth C. Hicken     | Executive Vice President<br>Operations                  |
| Rex R. Malson         | Executive Vice President<br>Operations                  |
| Alan J. Seelenfreund  | Executive Vice President<br>and Chief Financial Officer |
| John S. Wheaton       | Executive Vice President<br>Administration              |
| Ronald C. Anderson    | Vice President  |
| Stanley A. Greenblatt | Vice President  |
| James I. Johnston     | Vice President  |
| Marvin L. Krasnansky  | Vice President  |
| Ivan D. Meyerson      | Vice President and<br>General Counsel                   |
| Garret A. Scholz      | Vice President and Treasurer                            |
| Thomas B. Simone      | Vice President and Controller                           |
| Nancy A. Miller       | Vice President and<br>Corporate Secretary               |

|                           |                      |
|---------------------------|----------------------|
| Richard H. Hawkins        | Assistant Controller |
| Dana T. Iapicca           | Assistant Secretary  |
| Martha Keen               | Assistant Secretary  |
| Arthur Knapp              | Assistant Secretary  |
| Dennis P. O'Keefe         | Assistant Secretary  |
| Leonard M. Patterson, Jr. | Assistant Secretary  |
| Lorraine E. Peetz         | Assistant Secretary  |
| James F. Regan            | Assistant Secretary  |
| Alice L. Schulman         | Assistant Secretary  |
| Alan M. Pearce            | Assistant Treasurer  |

; and

FURTHER RESOLVED, that immediately after the Effective Time of the aforesaid Plan and Agreement of Merger this Corporation file with the State Department of Assessments and Taxation of Maryland, Articles of Restatement of the Charter of this Corporation in the form presented to and considered at this meeting, a copy of which shall be inserted in the minute book of the Corporation following the minutes of this meeting.

# **Attachment “G”**

S/H

7/22/87

The next item of business was to consider and act upon a proposal to change the state of incorporation of the Corporation from Maryland to Delaware and, in connection therewith, to adopt a new certificate of incorporation and by-laws, which include authorization for the Corporation to

enter into indemnification agreements with directors and officers, all of the above to be accomplished by means of a merger between the Corporation and the Delaware subsidiary of a newly formed Delaware corporation, as fully described in the Proxy Statement for this meeting. At the Chairman's request, the Secretary moved the adoption of the following resolution, which was duly seconded:

RESOLVED, that the proposal to change the state of incorporation of this Corporation from Maryland to Delaware is hereby approved, such approval constituting specific approval of the Plan and Agreement of Reorganization and the Plan and Agreement of Merger, each dated as of June 15, 1987, between McKesson Corporation, McKesson Holding Company and McKesson Acquisition Company, and all other transactions and proceedings related to reincorporation, all as described in the Proxy Statement, dated June 24, 1987, for the 1987 Annual Meeting of Stockholders of this Corporation, including, without limitation, adoption of a new certificate of incorporation and by-laws, which include authorization for the Corporation to enter into indemnification agreements with directors and officers.

The Chairman then opened the meeting for discussion of the proposal.

# **Attachment “H”**

Harding Lawson Associates

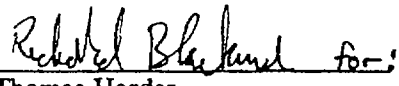
A Report Prepared for


McKesson Corporation  
One Post Street  
San Francisco, California 94104

**REMEDIAL INVESTIGATION  
McKESSON CORPORATION PROPERTY  
9005 SORENSEN AVENUE  
SANTA FE SPRINGS, CALIFORNIA**

Client No. 17333  
HLA Project No. 11136-168

by

  
Thomas Harder  
Staff Geologist

  
Ted A. Koelsch, Ph.D., RG  
Principal Geologist

Harding Lawson Associates  
3 Hutton Centre, Suite 200  
Santa Ana, California 92707  
714/556-7992

June 25, 1992  
Revised August 20, 1992

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## EXECUTIVE SUMMARY

This report presents the results of Harding Lawson Associates' (HLA) Remedial Investigation (RI) conducted at McKesson Corporation's (McKesson) former chemical facility located at 9005 Sorensen Avenue, Santa Fe Springs, California. HLA conducted this work on behalf of McKesson in accordance with Consent Order 89/90-007, issued by the California Department of Health Services (DHS), now the California Environmental Protection Agency - Department of Toxic Substances Control (DTSC). HLA's work was conducted in compliance with the DTSC guidelines and the U.S. Environmental Protection Agency's (EPA), October 1988, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA." Methods implemented during the RI are described in HLA's workplan entitled "Workplan (Revision 3), Remedial Investigation and Feasibility Study, McKesson Corporation Property, 9005 Sorensen Avenue, Santa Fe Springs, California," (Workplan), dated April 25, 1991.

The facility is located at 9005 Sorensen Avenue, in the City of Santa Fe Springs, Los Angeles County, California. The site is fenced; occupies approximately 4.3 acres in an industrialized area; and is bounded on the east by Sorensen Avenue, on the south by Fontaine Trucking Equipment Company, on the west by a small agricultural field owned by Liquid Air Corporation, and on the north by a Southern Pacific Railroad easement and Angeles Chemical Company (Angeles); a bulk chemical repackaging facility.

McKesson Chemical Company, a former division of McKesson, operated a bulk chemical repackaging facility at the site from 1976 to 1986. During this period of operation, the facility was organized into four areas for the purpose of chemical packaging:

- A solvent repack area,
- A corrosive repack area,
- A hydrogen peroxide repack area, and
- A Freon blending area.

Forty-four aboveground storage tanks (now demolished) were situated onsite within the four areas of operations. The tanks were contained within 2- to 3-foot-high concrete containment berms and separated by internal dike walls. Twenty-three underground storage tanks (USTs) are presently onsite and predominately located adjacent to the former aboveground solvent tank storage area. Railroad spurs are located along the northern and western boundaries of the site. Loading platforms and underground distribution lines were associated with the offloading of chemicals delivered via the railroad spurs. A drum storage area was designated for the onsite storage of hazardous waste, though it was never used.

In September 1985, the DTSC issued a Resource Conservation and Recovery Act (RCRA) Part B Hazardous Waste Facility Permit for the drum-storage area. This area has since been closed under RCRA regulations. The final RCRA closure report was submitted to the DTSC on February 5, 1990 (HLA, 1990a). On June 28, 1990, the DTSC acknowledged that the storage-drum area was officially closed.

At the request of the DTSC, McKesson Environmental Services (MES) conducted three subsurface investigations at the facility during its period of operation. Two studies were undertaken in the aboveground solvent-storage area, and one study was conducted in the corrosive-storage area. Chlorinated solvents were detected in both the soil and groundwater in the aboveground solvent-storage area in these investigations. The corrosive storage area was investigated for EPA extraction procedure (EP) Toxic compounds; none were detected.

The purpose of the RI was to assess the nature and extent of chemicals of concern in air, soil, surface water, and groundwater associated with the former operations at the McKesson site.

The RI included the monitoring of ambient meteorological conditions and air quality, drilling of soil borings, drilling and installation of groundwater monitoring wells, cone penetrometer testing (CPT)/HydroPunch groundwater sampling, the collection and analysis of surface and subsurface soil samples, and the collection and analysis of surface water and groundwater samples. All field work and physical testing of soil samples was performed by HLA geologists, engineers, and technicians under the direct oversight of a registered geologist

and/or professional engineer. Analytical testing of air, soil, and water samples was performed by a state-certified laboratory.

HLA's investigation of surface and subsurface soil and vadose zone conditions at the McKesson site was conducted in two phases. The first phase of the investigation was conducted from June to August 1990. Thirty-one soil borings were drilled and sampled during the first phase. Samples were also collected from four surface locations. Following review of the data collected during the first phase of the investigation, a second phase soil and vadose zone investigation was conducted in January and February of 1991, during which an additional ten soil borings were drilled and sampled.

Soil samples collected from borings drilled in the first phase of the investigation in the UST area, the aboveground storage tank area, and the Freon-blending area were analyzed for volatile and semivolatile organic compounds, glycols, and petroleum hydrocarbons. Based on the results from the first-phase borings, the samples collected from the three additional borings in the aboveground solvent-storage area were only analyzed for volatile organic compounds.

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characteristics. The monitoring well program was augmented by the collection of water samples using a HydroPunch sampling device. HydroPunch samples were collected at five onsite locations and twelve offsite locations.

Onsite groundwater monitoring wells were monitored for depth to groundwater 14 times during the period from June 1990 through April 1991. During the same period, three rounds of groundwater sampling were conducted. Samples collected in the first round of sampling conducted in August 1990 were analyzed using the following EPA methods:

- EPA Method 8240 - Volatile organic compounds,
- EPA Method 8270 - Semi-volatile compounds,
- EPA Method 8015 modified - Glycols,
- EPA Method 418.1 - Petroleum hydrocarbons,
- EPA Method 150.1 - pH,
- EPA Method 9050 - Conductivity,
- EPA Method 160.1 - Total dissolved solids,
- EPA Method 9036 - Sulfate,
- EPA Method 425.1 - Surfactants, and
- EPA Method 300.0/6010 - General minerals, selected metals.

Groundwater samples collected during subsequent sampling rounds were analyzed for volatile organics using EPA Method 8240 with selected samples being analyzed for general minerals and pH. Hydropunch groundwater samples collected from onsite and offsite locations were analyzed for volatile organics using EPA Method 8240.

Impacts to vadose zone soils and groundwater by chlorinated hydrocarbon compounds were identified in this investigation. The predominant compounds detected in both the soil and groundwater are 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), trichloroethene (TCE), and methylene chloride (dichloromethane [DCM]). Elevated concentrations of these compounds detected in the soil appear to be limited in their areal extent to the immediate vicinity, including and surrounding the aboveground solvent storage area. Minor impacts to the soil were identified along the subsurface distribution lines connecting the northern

railroad spur to the UST area. No significant impacts to vadose zone soils or groundwater were identified as resulting from activities associated with the storage, handling, or processing of corrosives, hydrogen peroxides, or glycols.

Two groundwater plumes exhibiting elevated concentrations of VOCs were identified during this investigation. An onsite plume, characterized by elevated concentrations of chlorinated hydrocarbons, including 1,1,1-TCA, PCE, TCE, 1,1-dichloroethene (1,1-DCE), and DCM was detected. Maximum concentrations of the major compounds comprising the onsite plume were detected in groundwater samples collected immediately downgradient of the aboveground solvent-storage area. Elevated concentrations extend offsite both downgradient and upgradient of the McKesson site. Even though a significant reduction of the concentration of compounds is observed perpendicular to the plume axis, the lateral extent of the plume has not been completely assessed. Vertically, the elevated concentration of compounds appear to be restricted to the upper part of the aquifer. No observations were made that would indicate elevated concentrations of dissolved organics or non-aqueous phase liquid solvents exist at depth within the aquifer.

An offsite plume, characterized by elevated concentrations of MEK, MIBK, and BTEX, in addition to concentrations of chlorinated hydrocarbons, was identified to the north (upgradient) and west (cross-gradient) of the McKesson site. This offsite plume extends downgradient from the Angeles site, which appears to be a possible source. Based on the compounds detected in the soil and the groundwater at the Angeles site during a preliminary investigation conducted in 1990 by SCS Engineers and the distribution of compounds detected in the groundwater upgradient of the McKesson site, the Angeles site appears to have contributed to the onsite plume identified at the McKesson site.

The observed distribution of compounds in the vadose zone soils appears to result from two transport processes. Within and in the vicinity of the aboveground solvent-storage area, the observed distribution is most probably the result of vertical migration of liquid-phase solvents through the vadose zone accompanied with lateral spreading along zones of high permeability contrasts. Away from the solvent storage tank area and at depths of 40 to 45 feet bgs, the

detected concentrations of volatile organics appear to be the result of volatilization of dissolved compounds present in the groundwater.

The observed plume configuration and aquifer test parameters indicated that the transport of chemical compounds in the groundwater is dominated by advection in a downgradient direction. Lateral to the plume axis, transport appears to be dependent primarily on diffusion. Diffusion also appears to control the distribution of compounds observed in the intermediate and deep zones of the aquifer.

A baseline risk assessment conducted by McLaren/ChemRisk concluded that under current conditions, the concentrations of the selected chemicals of concern detected in the site soils do not pose a significant noncancer risk or a significant increased cancer risk to future onsite residential or occupational populations. Risks to offsite populations were not quantitatively assessed. Site-related health risks associated with the chemicals detected in groundwater were assessed using existing groundwater concentrations. Since the relative contributions of probable onsite and offsite sources have not been established, it is not yet possible to determine the groundwater health risks that are attributed to the McKesson property.

Data collected as part of this investigation are sufficient to completely assess the extent of the groundwater plume identified onsite. However, offsite investigation of groundwater conditions is required to assess the downgradient, upgradient, and lateral extent of the plume. Assessment of soil and groundwater conditions upgradient of the McKesson site, including the Angeles site, is necessary to determine the magnitude of offsite contributions to the plumes identified both on and offsite.

Because of the proximity of the USTs onsite to the aboveground storage tank area in which elevated levels of volatile organics were encountered during the investigation, it was recommended by McKesson and agreed to by the DTSC that the removal of the USTs would be postponed until remedial measures were implemented that would effectively reduce the volatile content of the soils. One of the remedial action objectives presented in the Feasibility Study being prepared for onsite soil remediation is to reduce the VOC content

of the soils in the UST area sufficiently to permit excavation of the USTs in full compliance with South Coast Air Quality Management District guidelines (SCAQMD Rule 1166).

The following activities are recommended to complete the remedial investigation of the McKesson site:

- Upon removal of the USTs, collection and analysis of soil samples from beneath the tanks.
- Analyses of soil samples collected during the tank removal activities should be evaluated.
- A report presenting the results of the UST removals and incorporating data generated during this investigation should be prepared as an addendum to the RI Report.

These activities would complete the assessment of vadose zone soils onsite .

A workplan for the downgradient investigation of the groundwater plume detected onsite should be prepared. The scope of work associated with the downgradient investigation should be designed to monitor and assess the downgradient and lateral extent of the onsite plume.

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## EXECUTIVE SUMMARY

This baseline health risk assessment evaluates the potential human health risks associated with exposure to chemicals at the McKesson site in Santa Fe Springs, California. The baseline health risk assessment was prepared in a manner consistent with EPA's Risk Assessment Guidance for Superfund Volume I (EPA, 1989a) and Cal-EPA's draft Scientific and Technical Standards for Hazardous Waste Sites (Cal-EPA, 1990). The key elements of this document are summarized below.

### Chemicals of Concern

For the purposes of the risk assessment, the former "high activity" areas of the site are segregated into three areas: Area A (the railroad spur), Area B (the solvent storage area) and Area C (corrosive/oxidizer area). Any chemical detected in greater than 5% of the soil samples taken from these areas is considered a soil chemical of concern. This selection criterion yields twelve soil chemicals of concern which are quantitatively evaluated in this assessment. It is known that upgradient contamination has contributed to the presence of chemicals in groundwater at the McKesson site and downgradient from the McKesson site. Since the degree relative of contribution of on-site vs. off-site activities to the presence of chemicals in groundwater has not yet been assessed, it is not yet possible to determine the groundwater health risks that are attributed to the McKesson property. Nonetheless, health risks associated with groundwater exposure are assessed using existing groundwater concentrations.

Potentially Exposed Populations and Exposure Pathways

Based on a consideration of the current site conditions, potential future uses of the site property, and the known fate and transport characteristics of the chemicals of concern, the following soil exposure pathways are assessed for a future on-site residential and future on-site occupational exposure scenario: soil ingestion, dermal contact with soil, and vapor inhalation. Site data are used to establish representative soil concentrations for assessing exposure via direct soil contact (soil ingestion and dermal contact) and as input to the vapor emission models. The impacted aquifer at the McKesson site is not currently used as a drinking water source and will likely not be used as such in the foreseeable future due to elevated concentrations of total dissolved solids. Accordingly, on- and off-site incidental residential exposure to groundwater via ingestion and dermal contact (for example, if the aquifer were used as an irrigation source) is assessed to determine the risks associated with groundwater under current conditions. In order to ensure that groundwater-related health risks are not under-estimated, the maximum detected chemicals concentrations in any on-site or off-site well are used as representative groundwater concentrations. Age-specific exposure estimates (children and adults) are incorporated into the residential and occupational exposure scenarios. Where applicable, suggested regulatory default values of contaminant concentrations and exposure estimates are used to assess uptake in order to approximate a "reasonable maximal scenario." Although off-site populations could theoretically be exposed to site-related chemicals via vapor inhalation, this pathway is not quantitatively evaluated because the distance between on-site vapor emission sources and off-site populations is such that significant exposure to site-related vapors is unlikely to occur.

### Health Risk Estimates

#### *Soil Exposure Pathways*

For the soil pathways of exposure (vapor inhalation, soil ingestion, and dermal contact with soil), the total noncancer hazard indices (including all chemicals) are 1.0 or less for residents and workers. These results suggest that the soil chemicals of concern do not pose a significant noncancer hazard, according to the assumptions used in this assessment. Estimated increased cancer risks are  $8 \times 10^{-6}$  and  $2 \times 10^{-5}$  for the occupational and on-site residential scenarios, respectively. These estimated cancer risks are well within the range of increased cancer risks that have typically been considered "insignificant" for large populations at both the State and Federal levels.

#### *Groundwater Exposure Pathways*

For the groundwater pathways of exposure (incidental dermal contact and ingestion), the hazard indices range from 0.1 (dermal contact by adults) to 11.0 (ingestion by children). The estimated increased cancer risks are  $3 \times 10^{-3}$  for incidental groundwater ingestion and  $1 \times 10^{-4}$  for incidental dermal contact. While these estimated risks and hazard indices exceed levels that have typically been considered "acceptable" by regulators, it is not yet known to what degree site-related chemicals contribute to these estimates.

### Uncertainty Analysis

The conservatism present in the above estimates is quantitatively evaluated using a Monte Carlo analysis of probability distribution frequencies, rather than "point" default estimates, to describe a reasonable range of values for each exposure parameter. This uncertainty

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McKESSON-SANTA FE SPRINGS  
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analysis demonstrates that the health risk estimates derived for the "reasonable maximal scenario" are actually orders of magnitude greater than the health risks posed to a significant fraction of the potentially exposed populations. Hence, the uncertainty analysis quantitatively confirms that there is a large degree of conservatism in the health risk estimates estimated for the "reasonable maximal scenario."

## 1.0 INTRODUCTION

This health risk assessment has been prepared on behalf of the McKesson Chemical Company (McKesson), a former division of McKesson Corporation. The assessment fulfills the requirements for a baseline risk assessment of McKesson's Santa Fe Springs site as described in Consent Agreement Number 89/90-07 executed on January 9, 1990. The assessment has been prepared in a manner consistent with the draft California Environmental Protection Agency (Cal-EPA) (formerly the California Department of Health Services) guidance document Scientific and Technical Standards for Hazardous Waste Sites (Cal-EPA, 1990) and the United States Environmental Protection Agency (EPA) Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual (Part A) Interim Final (USEPA, 1989a). The document also incorporates input from Cal-EPA regarding the scope and technical approach of the assessment.

The purpose of this baseline risk assessment is to assess the nature and extent of potential human health risks associated with current conditions and potential future uses of the McKesson site in Santa Fe Springs, California. McKesson operated a bulk chemical repacking facility at the site from 1976 until its closure on November 1, 1986. Solvents, hydrogen peroxide, and corrosive chemicals were stored in both aboveground and underground tanks and piped to packaging areas as needed. Bulk chemicals were transported to and from the facility by rail and by truck. Finished products were generally transported from the facility by truck. At the time of closure, all tanks were emptied. Previous investigations have demonstrated the presence of petroleum hydrocarbons and volatile organic chemicals in site soil and groundwater (HLA, 1990). Currently, the facility stands dismantled; no aboveground tanks or equipment are on the property, and the pavement and buildings remain intact.

## EXECUTIVE SUMMARY

This report presents the results of Harding Lawson Associates' (HLA) Remedial Investigation (RI) conducted at McKesson Corporation's (McKesson) former chemical facility located at 9005 Sorensen Avenue, Santa Fe Springs, California. HLA conducted this work on behalf of McKesson in accordance with Consent Order 89/90-007, issued by the California Department of Health Services (DHS), now the California Environmental Protection Agency - Department of Toxic Substances Control (DTSC). HLA's work was conducted in compliance with the DTSC guidelines and the U.S. Environmental Protection Agency's (EPA), October 1988, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA." Methods implemented during the RI are described in HLA's workplan entitled "Workplan (Revision 3), Remedial Investigation and Feasibility Study, McKesson Corporation Property, 9005 Sorensen Avenue, Santa Fe Springs, California," (Workplan), dated April 25, 1991.

The facility is located at 9005 Sorensen Avenue, in the City of Santa Fe Springs, Los Angeles County, California. The site is fenced; occupies approximately 4.3 acres in an industrialized area; and is bounded on the east by Sorensen Avenue, on the south by Fontaine Trucking Equipment Company, on the west by a small agricultural field owned by Liquid Air Corporation, and on the north by a Southern Pacific Railroad easement and Angeles Chemical Company (Angeles); a bulk chemical repackaging facility.

McKesson Chemical Company, a former division of McKesson, operated a bulk chemical repackaging facility at the site from 1976 to 1986. During this period of operation, the facility was organized into four areas for the purpose of chemical packaging:

- A solvent repack area,
- A corrosive repack area,
- A hydrogen peroxide repack area, and
- A Freon blending area.

Forty-four aboveground storage tanks (now demolished) were situated onsite within the four areas of operations. The tanks were contained within 2- to 3-foot-high concrete containment berms and separated by internal dike walls. Twenty-three underground storage tanks (USTs) are presently onsite and predominately located adjacent to the former aboveground solvent tank storage area. Railroad spurs are located along the northern and western boundaries of the site. Loading platforms and underground distribution lines were associated with the offloading of chemicals delivered via the railroad spurs. A drum storage area was designated for the onsite storage of hazardous waste, though it was never used.

In September 1985, the DTSC issued a Resource Conservation and Recovery Act (RCRA) Part B Hazardous Waste Facility Permit for the drum-storage area. This area has since been closed under RCRA regulations. The final RCRA closure report was submitted to the DTSC on February 5, 1990 (HLA, 1990a). On June 28, 1990, the DTSC acknowledged that the storage-drum area was officially closed.

At the request of the DTSC, McKesson Environmental Services (MES) conducted three subsurface investigations at the facility during its period of operation. Two studies were undertaken in the aboveground solvent-storage area, and one study was conducted in the corrosive-storage area. Chlorinated solvents were detected in both the soil and groundwater in the aboveground solvent-storage area in these investigations. The corrosive storage area was investigated for EPA extraction procedure (EP) Toxic compounds; none were detected.

The purpose of the RI was to assess the nature and extent of chemicals of concern in air, soil, surface water, and groundwater associated with the former operations at the McKesson site.

The RI included the monitoring of ambient meteorological conditions and air quality, drilling of soil borings, drilling and installation of groundwater monitoring wells, cone penetrometer testing (CPT)/HydroPunch groundwater sampling, the collection and analysis of surface and subsurface soil samples, and the collection and analysis of surface water and groundwater samples. All field work and physical testing of soil samples was performed by HLA geologists, engineers, and technicians under the direct oversight of a registered geologist

and/or professional engineer. Analytical testing of air, soil, and water samples was performed by a state-certified laboratory.

HLA's investigation of surface and subsurface soil and vadose zone conditions at the McKesson site was conducted in two phases. The first phase of the investigation was conducted from June to August 1990. Thirty-one soil borings were drilled and sampled during the first phase. Samples were also collected from four surface locations. Following review of the data collected during the first phase of the investigation, a second phase soil and vadose zone investigation was conducted in January and February of 1991, during which an additional ten soil borings were drilled and sampled.

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Onsite groundwater monitoring wells were monitored for depth to groundwater 14 times during the period from June 1990 through April 1991. During the same period, three rounds of groundwater sampling were conducted. Samples collected in the first round of sampling conducted in August 1990 were analyzed using the following EPA methods:

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- EPA Method 8270 - Semi-volatile compounds,
- EPA Method 8015 modified - Glycols,
- EPA Method 418.1 - Petroleum hydrocarbons,
- EPA Method 150.1 - pH,
- EPA Method 9050 - Conductivity,
- EPA Method 160.1 - Total dissolved solids,
- EPA Method 9036 - Sulfate,
- EPA Method 425.1 - Surfactants, and
- EPA Method 300.0/6010 - General minerals, selected metals.

Groundwater samples collected during subsequent sampling rounds were analyzed for volatile organics using EPA Method 8240 with selected samples being analyzed for general minerals and pH. Hydropunch groundwater samples collected from onsite and offsite locations were analyzed for volatile organics using EPA Method 8240.

Impacts to vadose zone soils and groundwater by chlorinated hydrocarbon compounds were identified in this investigation. The predominant compounds detected in both the soil and groundwater are 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), trichloroethene (TCE), and methylene chloride (dichloromethane [DCM]). Elevated concentrations of these compounds detected in the soil appear to be limited in their areal extent to the immediate vicinity, including and surrounding the aboveground solvent storage area. Minor impacts to the soil were identified along the subsurface distribution lines connecting the northern

railroad spur to the UST area. No significant impacts to vadose zone soils or groundwater were identified as resulting from activities associated with the storage, handling, or processing of corrosives, hydrogen peroxides, or glycols.

Two groundwater plumes exhibiting elevated concentrations of VOCs were identified during this investigation. An onsite plume, characterized by elevated concentrations of chlorinated hydrocarbons, including 1,1,1-TCA, PCE, TCE, 1,1-dichloroethene (1,1-DCE), and DCM was detected. Maximum concentrations of the major compounds comprising the onsite plume were detected in groundwater samples collected immediately downgradient of the aboveground solvent-storage area. Elevated concentrations extend offsite both downgradient and upgradient of the McKesson site. Even though a significant reduction of the concentration of compounds is observed perpendicular to the plume axis, the lateral extent of the plume has not been completely assessed. Vertically, the elevated concentration of compounds appear to be restricted to the upper part of the aquifer. No observations were made that would indicate elevated concentrations of dissolved organics or non-aqueous phase liquid solvents exist at depth within the aquifer.

An offsite plume, characterized by elevated concentrations of MEK, MIBK, and BTEX, in addition to concentrations of chlorinated hydrocarbons, was identified to the north (upgradient) and west (cross-gradient) of the McKesson site. This offsite plume extends downgradient from the Angeles site, which appears to be a possible source. Based on the compounds detected in the soil and the groundwater at the Angeles site during a preliminary investigation conducted in 1990 by SCS Engineers and the distribution of compounds detected in the groundwater upgradient of the McKesson site, the Angeles site appears to have contributed to the onsite plume identified at the McKesson site.

The observed distribution of compounds in the vadose zone soils appears to result from two transport processes. Within and in the vicinity of the aboveground solvent-storage area, the observed distribution is most probably the result of vertical migration of liquid-phase solvents through the vadose zone accompanied with lateral spreading along zones of high permeability contrasts. Away from the solvent storage tank area and at depths of 40 to 45 feet bgs, the

detected concentrations of volatile organics appear to be the result of volatilization of dissolved compounds present in the groundwater.

The observed plume configuration and aquifer test parameters indicated that the transport of chemical compounds in the groundwater is dominated by advection in a downgradient direction. Lateral to the plume axis, transport appears to be dependent primarily on diffusion. Diffusion also appears to control the distribution of compounds observed in the intermediate and deep zones of the aquifer.

A baseline risk assessment conducted by McLaren/ChemRisk concluded that under current conditions, the concentrations of the selected chemicals of concern detected in the site soils do not pose a significant noncancer risk or a significant increased cancer risk to future onsite residential or occupational populations. Risks to offsite populations were not quantitatively assessed. Site-related health risks associated with the chemicals detected in groundwater were assessed using existing groundwater concentrations. Since the relative contributions of probable onsite and offsite sources have not been established, it is not yet possible to determine the groundwater health risks that are attributed to the McKesson property.

Data collected as part of this investigation are sufficient to completely assess the extent of the groundwater plume identified onsite. However, offsite investigation of groundwater conditions is required to assess the downgradient, upgradient, and lateral extent of the plume. Assessment of soil and groundwater conditions upgradient of the McKesson site, including the Angeles site, is necessary to determine the magnitude of offsite contributions to the plumes identified both on and offsite.

Because of the proximity of the USTs onsite to the aboveground storage tank area in which elevated levels of volatile organics were encountered during the investigation, it was recommended by McKesson and agreed to by the DTSC that the removal of the USTs would be postponed until remedial measures were implemented that would effectively reduce the volatile content of the soils. One of the remedial action objectives presented in the Feasibility Study being prepared for onsite soil remediation is to reduce the VOC content

of the soils in the UST area sufficiently to permit excavation of the USTs in full compliance with South Coast Air Quality Management District guidelines (SCAQMD Rule 1166).

The following activities are recommended to complete the remedial investigation of the McKesson site:

- Upon removal of the USTs, collection and analysis of soil samples from beneath the tanks.
- Analyses of soil samples collected during the tank removal activities should be evaluated.
- A report presenting the results of the UST removals and incorporating data generated during this investigation should be prepared as an addendum to the RI Report.

These activities would complete the assessment of vadose zone soils onsite .

A workplan for the downgradient investigation of the groundwater plume detected onsite should be prepared. The scope of work associated with the downgradient investigation should be designed to monitor and assess the downgradient and lateral extent of the onsite plume.

## 1.0 INTRODUCTION

This report presents the results of Harding Lawson Associates (HLA) Remedial Investigation (RI) conducted at McKesson Corporation's (McKesson) former chemical facility located at 9005 Sorensen Avenue, Santa Fe Springs, California (Plate 1). HLA conducted this work in accordance with Consent Order 89/90-007, issued by the California Department of Health Services (DHS), now the California Environmental Protection Agency - Department of Toxic Substances Control (DTSC). HLA's work was conducted in compliance with the DTSC guidelines and the U.S. Environmental Protection Agency's (EPA), October 1988, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA". Methods implemented during the RI are described in HLA's workplan entitled "Workplan (Revision 3), Remedial Investigation and Feasibility Study, McKesson Corporation Property, 9005 Sorensen Avenue, Santa Fe Springs, California," (Workplan), dated April 25, 1991 (HLA, 1990b).

### 1.1 REPORT ORGANIZATION

The following sections describe the study area investigated, the physical characteristics of the study area, the nature and extent of the chemicals present in the environment, and an evaluation of public health risks.

Section 1.0 presents the purpose of the RI, a description of the general features, history, and past operations of the site and previous investigations. Section 2.0 describes the components of the RI. Results of the physical characterization of the site are presented in Section 3.0. Section 4.0 describes the nature and extent of chemicals detected in the soil and groundwater. Chemical fate and transport processes are discussed in Section 5.0. Section 6.0 presents the results of a baseline risk assessment. Summary and conclusions are presented in Section 7.0.

## **1.2 PURPOSE OF THE REMEDIAL INVESTIGATION**

The RI was conducted to achieve four main objectives:

- Assess the nature and extent of chemicals of concern in air, soil, surface water, and groundwater associated with former operations at the McKesson site,
- Identify existing and potential migration pathways,
- Provide data sufficient to identify and evaluate appropriate remedial alternatives, and
- Collect and evaluate information necessary to prepare a remedial action plan in accordance with established regulatory guidelines.

## **1.3 SITE BACKGROUND**

### **1.3.1 Site Description**

The facility is located at 9005 Sorensen Avenue, in the City of Santa Fe Springs, Los Angeles County, California (Plate 1). The site is fenced and occupies approximately 4.3 acres in an industrialized area. The site is bounded on the east by Sorensen Avenue; on the south by Fontaine Trucking Equipment Company; on the west by a small agricultural field owned by Liquid Air Corporation; and on the north by a Southern Pacific Railroad easement and Angeles Chemical Company (Plate 2).

The facility lies at approximately 150 feet above Mean Sea Level (MSL). The surface of the facility is paved with asphalt, concrete, or a gravel base. Surface drainage is to the northeast, toward an adjacent drainage channel and Sorensen Avenue. Plate 3 illustrates the layout of the facility and immediate vicinity on a site topographic map developed for the RI.

### **1.3.2 Site History**

Historic land uses were reviewed by studying available aerial photographs obtained from the Fairchild Aerial Photography Collection at Whittier College and from Aerial Map Industries,

Santa Ana, California. From 1927 to the time that McKesson developed the facility, in 1975 the site was undeveloped and may have been used for agricultural purposes. Railroad tracks were visible along the northern property boundary as early as 1927. Activities in the surrounding area included agriculture, primarily to the north, and oil production to the south of the site. Industrial activities expanded into the general vicinity by 1965. By 1970, the railroad spur west of the site was present.

McKesson Chemical Company, a former division of McKesson, began operating a bulk chemical repacking facility at the site in 1976. The facility ceased operations on November 1, 1986, as a result of McKesson's sale of substantially all of the assets of its chemical company. At the time of closure, all underground and aboveground tanks were emptied.

During the period the facility operated, it was organized into four areas for the purpose of chemical packaging: 1) the solvent repack area, 2) the corrosive repack area, 3) the hydrogen peroxide repack area, and 4) the freon blending area. Chemicals were stored in both aboveground and underground tanks and piped to packaging areas as needed. Bulk chemicals were transported to and from the facility by rail and by truck. Finished products were generally transported from the facility by truck.

A concrete trench-sump is present in the northern portion of the facility adjacent to one of the railroad spurs. The sump contains piping for chemical transport. Contents of railroad cars were sometimes offloaded directly to these lines and transported to other areas of the facility.

Three buildings are currently present at the facility. The main building contained the office, warehouse, and packing and storage area. The warehouse was historically used for chemical and material storage. The other two buildings were yard offices. All buildings are currently empty. The site also contains a truck scale and a truck pit for loading and unloading. Loading platforms and a drum-wash shed were removed during demolition activities conducted during December 1990.

The facility contained a drum-storage area that was designated for the onsite storage of hazardous waste, though it was never used. The bermed, formerly covered, concrete pad in this area measures 26 by 20 by 0.5-foot-thick and had the capacity for storing 144 drums on wooden pallets. In September 1985, the DTSC issued a Resource Conservation and Recovery Act (RCRA) Part B Hazardous Waste Facility Permit for the drum-storage area. This area has since been closed under RCRA regulations. The final RCRA closure report was submitted to the DTSC on February 5, 1990 (HLA, 1990a). On June 28, 1990, the DTSC acknowledged that the drum storage area was officially closed.

Aboveground tanks onsite were grouped in four locations: (1) adjacent to the solvent repack area, (2) the Freon blending area, (3) the hydrogen peroxide packaging area, and (4) the corrosive packaging area. The solvent storage area contained 13 steel tanks (S1 through S13); all aboveground tanks were removed during demolition activities conducted in December 1990. Tanks within the Freon blending area (S14 through S17) had been previously removed. The hydrogen peroxide and corrosive storage areas contained 27 steel tanks (C1 through C27); all tanks were removed in December 1990. All the aboveground tanks had been located within concrete-diked containment areas. The base of containment areas are composed of gravel and underlain by a compacted clay liner, except in the vicinity of former tanks S4, S13, and S18, where the ground surface was covered by concrete. After the facility was closed, the aboveground tanks were emptied using a vacuum truck. All aboveground tanks, loading platforms, drum-washing and repackaging sheds, and the RCRA Waste Canopy were removed during demolition activities conducted in December 1990 by Riedel Environmental Services.

The facility presently contains 21 underground storage tanks (USTs) (U1 through U21), and two sumps (4401 and 4402). One UST (U1) is located adjacent to the fuel dispenser island and was used to store diesel fuel. Nineteen of the USTs (U2 through U20) are located in the UST area and were used for solvent storage. Solvents were transferred from railroad cars along subsurface distribution lines, as illustrated on Plate 3. One solvent storage UST (U21) is located adjacent to the aboveground solvent storage area and was used to collect an assortment of spent solvent wastes. The two sumps are the neutralization pit (4401) and the runoff control sump (4402). After the facility was closed, the USTs were emptied using

a vacuum truck. The USTs were emptied again in December 1990 during aboveground demolition activities by Riedel Environmental Services after it was discovered that surface runoff water had entered some of the USTs with unsecured fill-pipe caps. No further UST decontamination was conducted. The USTs are planned to be removed following onsite soil remediation.

Two waste streams were generated during facility operations: (1) corrosive drum-rinsing operations produced waste water, and (2) the solvent distribution lines (piping) were flushed after each use with isopropyl alcohol (IPA) and this generated a waste stream consisting of solvent-saturated IPA.

The corrosive drum-rinsing operations, which took place in the former drum-wash shed shown on Plate 3, generated approximately 1,500 gallons per day (gpd) of wastewater. Wastewater that collected on a concrete slab was drained to a rubber-lined concrete neutralization pit (4401). Prior to discharge to the sanitary sewer, the wastewater was monitored for pH and other critical parameters. This discharge was permitted by Los Angeles County Sanitation Industrial Wastewater Discharge Permit No. 3785 (June 17, 1985). After being rinsed, the drums were sent to a drum recycler and reconditioner. Drums were then either returned to the facility for reuse or disposed by the recycler.

Solvent-saturated IPA, generated during flushing of the solvent lines, was recovered in a closed-head metal drum. The drum was marked with the name of the flushed solvent and "IPA"; flushed material was reused to flush compatible products until it could no longer adequately clean the lines.

Outside containment areas, surface water runoff produced during periods of rainfall drains to the runoff-control sump (4402) located in the northeast section of the property. The sump is approximately 2 by 2 by 4 feet and is equipped with a locking gate valve. When the facility was in operation, a runoff water sample was tested for pH and specific gravity before the collected runoff was discharged to an unlined drainage channel north of the site. The discharge point is shown on Plate 3. Rainwater discharge was controlled by National Pollution Discharge and Elimination System (NPDES) Permit No. CA0057631, issued by the

California Regional Water Quality Control Board (RWQCB) in December 1975. Currently, the gate valve is closed, and rainwater ponds on the site during periods of heavy rainfall.

### **1.3.3 Previous Investigations**

#### **1.3.3.1 Onsite Investigations**

McKesson conducted three previous subsurface investigations at the facility at the request of the DTSC.

The first investigation was conducted in the aboveground solvent-storage area and was initiated on June 24, 1984. McKesson hand-augured four shallow borings at the locations shown on Plate 4. Three borings (B-2 through B-4) were located in the diked storage area and one "background" boring (B-5) was located in the drainage channel. Soil samples were collected at 1, 3, and 6 feet below ground surface (bgs) and analyzed for volatile organics. In addition, one surface-water sample was collected from water ponded in the diked storage area. Soil and water sample results are summarized in Table 1. Volatile organic chemicals were detected in the soil samples. The surface-water sample contained glycols, butyl cellosolve, and ethanols.

On October 4, 1984, two soil samples were collected from the corrosive-storage area near the sulfuric acid tanks (C3 through C5); the exact locations of these samples are unknown. Samples were collected at approximately 0.5 and 1 foot bgs and were analyzed for EPA Extraction Procedure (EP) Toxic compounds. The analytical results are presented in Table 2 and indicate that EP Toxic compounds were not detected.

McKesson Environmental Services (MES) conducted the second investigation in the aboveground solvent-storage area in March 1986. Three soil borings (B-1 through B-3) 32 to 35 feet deep and four monitoring wells (MW-1 through MW-4) 25 to 29 feet deep were drilled at the locations shown on Plate 4. Soil samples were collected at approximately 5-foot intervals above the water table and at more closely spaced intervals below the water table, which was at a depth of approximately 25 feet bgs at that time. Six soil and three

groundwater samples were submitted to a laboratory for analysis. Collected samples were analyzed for volatile organics (EPA Method 8240/624), nonhalogenated volatile organics (EPA Method 8015), and polynuclear aromatic hydrocarbons (EPA Method 610). One soil sample (Boring B-1 at 27 feet) was also analyzed for semivolatile organics (EPA Method 8270). Sample results for soil and groundwater are summarized in Table 3. Volatile organic compounds (VOCs) and petroleum hydrocarbons were detected in both soil and perched groundwater underlying the aboveground solvent-storage area.

In October 1989, HLA conducted a limited investigation in the vicinity of the hazardous waste drum-storage area as part of the required RCRA closure. During HLA's investigation, five soil samples (SP-1 through SP-5) were collected at approximately 0.5 foot bgs at the locations shown on Plate 4. Samples were tested for pH (EPA Method 9045), glycols (EPA Method 8015, modified), volatile organics (EPA Method 8240), and semivolatile organics (EPA Method 8270). Analytical results are summarized in Table 4. The soil contained only relatively low concentrations of tetrachloroethene (PCE) and trichloroethene (TCE) underlying the RCRA drum storage area.

#### 1.3.3.2 Offsite Investigations

Environmental investigations have previously been conducted at four facilities in the areas surrounding the McKesson site (Plate 2):

- Southern California Chemical Corporation (SCC)  
8851 Dice Road, Santa Fe Springs
- Diversey Wyandotte Corporation (Diversey)  
8021 Dice Road, Santa Fe Springs
- T-Chem Corporation  
9028 Dice Road, Santa Fe Springs
- Angeles Chemical Company (Angeles)  
8915 Sorensen Avenue, Santa Fe Springs

#### 1.3.3.2.1 Southern California Chemical Corporation

SCC is located west of the McKesson site and on the north side of the drainage channel that flows to the east, along the northern boundary of the McKesson site. The facility is reported to be an original manufacturer of patented and proprietary inorganic chemicals for electronic and printed circuitry, plating, water treatment, and agricultural uses. Chemicals historically manufactured onsite included: liquid copper sulfate; copper oxides; copper chlorides; ferric chlorides and other proprietary formulations that included ammoniacal and other etchants. Manufacture of zinc sulfate solutions was discontinued between 1977 and 1979. Chemicals reportedly used onsite as of 1985 included ammonia, iron, copper chemicals, hydrochloric acid, sulfuric acid, and other inorganic compounds (Kleinfelder, 1986a).

SCC has a history of hazardous waste discharge, spillage, and leakage dating from approximately 1957. SCC possesses an industrial waste discharge permit. An investigation was conducted in 1985/1986 by J.H. Kleinfelder and Associates in response to requests by the California Regional Water Control Board and the California Department of Health Services to monitor an onsite wastewater pond. The investigation was expanded after elevated levels of organics and inorganics were detected. A total of 19 soil borings were drilled to depths ranging from 15 to 110 feet bgs, and 13 monitoring wells were installed as part of the investigation. Elevated levels of the following constituents were detected in isolated wells at SCC (Kleinfelder, 1986a):

- Trichloroethene (TCE) - 550 ug/L,
- Toluene - 8,300 ug/L,
- Xylenes - 10,000 ug/L,
- Ethylbenzene - 3,000 ug/L,
- Tetrachloroethene (PCE) - 1.2 ug/L,
- 1,1-dichloroethene (1,1-DCE) - 100 ug/L, and
- 1,1-dichloroethane (1,1-DCA) - 100 ug/L.

No sources for the organics were identified during the investigation.

#### 1.3.3.2.2 Diversey Wyandotte Corporation

Diversey is located west of the McKesson site across Dice Road. The facility has reportedly been operating under various names since 1951, and as of 1985 was producing a range of products including cleaners and defoaming agents. From 1954 through 1970, acids, alkalis, ethyl alcohol, and IPA were disposed of in onsite injection wells. From 1980 through 1984, the waste stream from the facility reportedly consisted of acids, alkalis, methylene chloride, chromium, phenolic, and crysilic acids. A subsurface investigation was conducted in 1985 by J.H. Kleinfelder and Associates in response to concerns raised in a Preliminary Assessment prepared by the DHS in April 1984.

Nine soil borings were drilled to depths ranging from 30 to 78 feet, and three were converted to groundwater monitoring wells. Only one of the three wells was analyzed for organics (purgeable halocarbons), using EPA Method 601. Low levels of organics were detected:

- Methylene chloride - 14 ug/L,
- 1,1,1-trichloroethane (1,1,1-TCA) - 8 ug/L,
- PCE - 9 ug/L,
- TCE - 90 ug/L,
- 1,1-DCE - 34 ug/L,
- 1,1-DCA - 5 ug/L, and
- Chloroform - 3 ug/L.

No organics were detected in the soil samples analyzed (Kleinfelder 1986b).

#### 1.3.3.2.3 T-Chem Corporation

The T-Chem facility is located southwest of the McKesson site at 9028 Dice Road. Materials listed with the Santa Fe Springs Fire Department as being used by T-Chem include: chlorine, sodium hydroxide, hydrogen peroxide, ammonia, dodecylbenzene, sulfur dioxide, sulfuric acid, diethanolamine, 1,4-dioxane, ethanol, ethoxysulfate, and sodium dichloroisocyanate. One 12,000 gallon UST containing diesel is known to exist onsite with four shallow (less than

40 feet deep) leak detection wells. It is not known whether groundwater from these wells has been analyzed. County of Los Angeles Department of Health records indicate that water samples from the waste stream/clarifier system, analyzed in July 1989, had detectable concentrations of:

- 1,1-DCE - 18 ug/L,
- Chloroform ranging from 340 to 7,500 ug/L,
- 1,1,1-TCA - 210 ug/L, and
- Toluene - 31 ug/L.

Soil samples collected when the wells were installed had no detectable quantities of volatile organic compounds.

#### 1.3.3.2.4 Angeles Chemical Company

SCS Engineers conducted a preliminary site investigation at the Angeles in 1990, as part of an underground storage tank permitting requirement of the Los Angeles County Department of Public Works (SCS, 1991). Angeles is a bulk chemical repacking facility located immediately north, and upgradient of the McKesson site. Chemicals stored and used on the Angeles site include, but are not limited to: acetone, methylene chloride, 1,1,1-TCA, PCE, methyl ethyl ketone (MEK), toluene, xylene, isobutyl acetate, butyl cellosolve, IPA, propanol, kerosene, diesel, and unleaded gasoline.

Fifteen soil borings were drilled as part of the site investigation and ranged in depth from 20 to 60 feet bgs; one monitoring well was installed. Collected soil samples were tested for VOCs using EPA method 8240; groundwater was tested for VOCs using EPA method 624. Elevated levels of 13 different VOCs were detected in the soil:

- 1,1,1-TCA - 28 mg/kg,
- PCE - 48 mg/kg,
- MEK - 29 mg/kg,
- Acetone - 55 mg/kg,

- Toluene - greater than 220 mg/kg,
- Benzene - 15 mg/kg,
- 1,1-DCA - 0.31 mg/kg,
- 1,1-DCE - 0.68 mg/kg,
- Ethylbenzene - greater than 210 mg/kg,
- DCM - 10 mg/kg,
- 4 Methyl - 2-pentanone (MIBK) - 9.3 mg/kg,
- TCE - 9.9 mg/kg, and
- Xylene - greater than 540 mg/kg.

Eight VOCs were detected in the one groundwater sample analyzed:

- 1,1,1-TCA - 120 ug/L,
- Xylenes - 18 ug/L,
- Benzene - 10 ug/L,
- 1,1-DCA - 21 ug/L,
- 1,1-DCE - 270 ug/L,
- PCE - 100 ug/L,
- Toluene - 10 ug/L, and
- TCE - 210 ug/L.

Acetone, MEK, and MIBK are not included in the target analyte list for Method 624 and, therefore, were not analyzed for.

## 2.0 STUDY AREA INVESTIGATION

This section describes the field and laboratory investigation conducted by HLA to characterize the site geology, soil and vadose zones, hydrogeology, meteorological setting and air quality, and the nature and extent of contaminants at and in the near vicinity of the site.

These investigations included the monitoring of ambient meteorological conditions and air quality, drilling of soil borings, drilling and installation of groundwater monitoring wells, cone penetrometer testing (CPT)/HydroPunch groundwater sampling, the collection and analysis of surface and subsurface soil samples, and the collection and analysis of surface water and groundwater samples. All field work and physical testing of soil samples was performed by HLA geologists, engineers, and technicians under the direct oversight of a registered geologist and/or professional engineer. All field work was done in accordance with the Project Procedures Manual presented as Appendix C in the Work Plan (HLA, 1990b). Analytical testing of air, soil, and water samples was performed by a state-certified laboratory.

### 2.1 SITE FEATURES INVESTIGATION

A site feature investigation was conducted to properly identify surface and subsurface facilities, features, and uses. Historical aerial photographs of the site were reviewed to document the land usage prior to the construction of the McKesson facility.

#### 2.1.1 Topographic Survey

A detailed facility and topographic map (Plate 3) was produced to properly and accurately identify and locate site features including soil borings and monitoring wells. A combination of aerial photography and field surveying was used to create the map. All buildings, aboveground and underground tanks and piping, railroad spurs, drainage channels, and other pertinent surface features are located on the map. This map was used as the base plan for this investigation. Locations of all borings, monitoring wells, CPT probes, and surface

samples were surveyed by a California state licensed surveyor. Survey data are presented in Appendix E.

### **2.1.2 Geophysical and Utility Surveys**

Geophysical and utility surveys were conducted prior to initiating onsite and offsite subsurface investigation activities. Underground Services Alert was notified prior to all offsite activities. Geophysical techniques including ground penetrating radar, electromagnetic conductivity, and electromagnetic frequency detection was used to detect and locate underground utilities in the boring locations. Subsurface distribution lines connecting the northern railroad spur and the underground tank area were also identified and mapped.

## **2.2 HAZARDOUS SUBSTANCES INVESTIGATION**

### **2.2.1 Hazardous Material Types**

Available information on chemicals historically used, stored, or mixed on the McKesson site are presented in Tables 5 through 7, and include volatile organic solvents, glycols, acids, bases, and petroleum hydrocarbons. Tables 5 through 7 also identify the historic contents of the individual tanks, the materials of tank construction, and tank capacities.

### **2.2.2 Potential Contaminant Sources**

#### **2.2.2.1 Onsite Sources**

Aboveground solvent storage tanks S-1 through S-13 were located in the bermed solvent tank area immediately to the west of the UST area. Historical contents of aboveground solvent-storage tanks S-1 through S-13 consisted of PCE, methylene chloride, 1,1,1-TCA, TCE, ethylene glycol, propylene glycol, glycol ether, butyl cellosolve, isopropyl alcohol, Sorbitol (polyol), and Freon-113.

Aboveground storage tanks S-14 through S-17 were located within a bermed containment in the Freon-blending area to the northeast of the UST farm. The historical contents of Tanks S-14 through S-17 are not known.

The bermed corrosive and hydrogen peroxide storage area, located along the western perimeter of the site, contained aboveground storage tanks C-1 through C-28. Historically, Tanks C-1 through C-28 contained nitric acid, sulfuric acid, hydrochloric acid, acetic acid, sodium hydroxide, potassium hydroxide, Triton-N-101, Triton-N-100, naplum, and sludge.

All aboveground storage tanks, the packaging sheds, the drum-washing shed, and all loading platforms were removed from the site during demolition activities conducted in December 1990.

The UST area, which includes Tanks U2 through U20, is located near the middle portion of the northeast quadrant of the site (Plate 3). Historical contents of Tanks U2 through U20 consisted of fuels (gasoline), Stoddard solvent, mineral spirits, MCK solvent (a non-chlorinated, naphthene-based solvent), acetone, hexane, methanol, hydrocarbon solvent, cellosolve acetate, PX-2, glycol ether ED, xylene, toluene, heptane, isopropyl alcohol, methanol, and MEK. UST U-1 historically contained diesel fuel and is located in the southeast quadrant of the site adjacent to the diesel dispenser. UST U-21 is located immediately south of the aboveground solvent tank-storage area adjacent to the solvent packaging shed. UST U-21 was used as a solvent waste tank and also contained formaldehyde at various times.

Sumps 4401 and 4402 were used as a neutralization pit and runoff-control sump, respectively. Sump 4401 is located near the northwest corner of the site and stored mineral acids for neutralization of wastewater from corrosive drum-rinsing operations. Sump 4402 located to the northeast of the UST farm, was used to control runoff from the site.

All USTs and sumps are currently in place. Contents of these tanks were removed with a vacuum truck after the facility was closed. The USTs were again emptied using a vacuum

truck during aboveground tank demolition activities in December 1990, because surface runoff had entered some of the USTs with unsecured fillcaps.

In addition to being stored onsite, chemicals were handled at various locations throughout the site. Chemicals were typically delivered (in bulk) to the facility via railroad spurs near the northern and western property perimeters. Chemical product was historically transferred from the northern railroad spur to the aboveground solvent storage tanks and USTs, using loading platforms, the pipe trench sump, and subsurface distribution lines as illustrated on Plate 3. Product was transferred from the western railroad spur to the corrosive and hydrogen peroxide storage area using the loading platforms.

Chemicals were packaged in the solvent, corrosive, and hydrogen peroxide packaging sheds at the locations illustrated on Plate 3. Packaged end-product was typically loaded onto trucks in the truck pit area before distribution.

#### **2.2.2.2 Offsite Sources**

In addition to the onsite chemical storage areas and potential release sources identified above, potential sources of contamination also exist offsite. Angeles is located approximately 110 feet north of the McKesson site (Plate 2). Angeles conducts a business similar to McKesson, handling many of the same chemical compounds. Chemicals reportedly used or stored at the Angeles site are listed in Table 8. The results of a subsurface investigation, conducted by SCS Consultants for Angeles are presented in Table 9. Compounds detected in the soil included acetone, benzene, DCM, MEK, 1,1-DCA, 1,1-DCE, ethylbenzene, MIBK, PCE, toluene, TCA, TCE, and xylenes. Benzene, 1,1-DCA, 1,1-DCE, PCE, toluene, TCA, TCE, and xylene were detected in the groundwater samples (SCC Consultants, January 1991).

Another potential source of offsite contribution to groundwater quality impairment underlying the McKesson site is the unlined drainage channel that parallels the northern property line and flows from west to east. To the west of Dice Road (approximately 1/8 mile

west of the site), soil lining the drainage channel was observed to be stained, coated with an unknown, unidentified, white powdery substance, and containing excess moisture.

### 2.3 METEOROLOGICAL INVESTIGATION

Meteorological and ambient air-quality monitoring was conducted onsite from April 27 to May 24, 1990. The objectives of the air monitoring program were to develop a micrometeorological database to characterize diurnal windflow patterns, collect integrated ambient air samples representative of the season during which sampling was being conducted, and measure "24-hour" and "less-than-24-hour" air contaminant concentrations at perimeter monitoring stations. Meteorological data recorded onsite during the initial two weeks of the monitoring program were evaluated to characterize the site-specific windflow profile and to select representative locations for the four perimeter monitoring stations.

A Climatronics F-460 Wind Recording System was installed at approximately the center of the site on April 27, 1990. This instrument provided a continuous record of onsite windspeed and direction. Continuously monitored meteorological data collected onsite were converted to hourly averages. Four ambient air-sampling systems were also installed at the site. Locations of the Meteorological Station and the four sampling system sites are shown on Plate 5. Two sampling systems (Sites 1 and 2) were installed at the eastern and northeastern perimeters of the site to monitor the downwind conditions during the observed daytime sea breeze windflow. Two additional sampling systems (Sites 3 and 4) were installed at the southwestern and southern perimeters and were operated during the hours of the expected evening drainage windflow conditions.

Two "24-hour" and two "less-than-24-hour" ambient air samples were collected:

| <u>Sample Date</u><br><u>(1990)</u> | <u>Site</u><br><u>Number</u> | <u>Site</u><br><u>Location</u> | <u>Sample</u><br><u>Interval</u> |
|-------------------------------------|------------------------------|--------------------------------|----------------------------------|
| May 16-17                           | 2                            | Northeast Perimeter            | 1100-1100 (24 hours)             |
| May 17-18                           | 3                            | Southeast Perimeter            | 2300-0700 (8 hours)              |
| May 17-18                           | 4                            | South Perimeter                | 2300-0700 (8 hours)              |
| May 23-24                           | 1                            | East Perimeter                 | 1100-1100 (24 hours)             |

The air samples were collected in Tedlar bags enclosed in sealed cardboard boxes to prevent photochemical reactions during sampling and transportation. Subsequent to collection, the air samples were transported to Analytical Technologies Inc. (ATI), a State-certified laboratory, under chain-of-custody procedures for analysis for VOCs using EPA Method 8240.

## 2.4 SOIL AND VADOSE ZONE INVESTIGATION

HLA's investigation of surface and subsurface soil and vadose zone conditions at the McKesson site was conducted in two phases. The first phase of the investigation was conducted from June to August 1990. Thirty-one soil borings were drilled and sampled during the first phase. Samples were also collected from four surface locations. Following review of the data collected during the first phase of the investigation, a second phase soil and vadose zone investigation was conducted in January and February of 1991, during which an additional ten soil borings were drilled and sampled. The borings and surface-sampling locations are presented on Plate 5.

### 2.4.1 Surface Soil

To assess the impact of surface water runoff from the site, four shallow hand-auger borings (SS-01 through SS-04) were drilled and sampled near the runoff control-sump discharge point in the unlined drainage channel along the northern boundary of the site. A total of eight soil samples were collected at depths of approximately 0.5 and 1.0 feet bgs at each location.

#### 2.4.2 Subsurface Soil

A total of forty-one soil borings were drilled and sampled to assess the subsurface conditions in ten areas of concern including those identified as potential contaminant sources. Areas targeted for subsurface investigation are as follows:

- Underground storage tank area,
- Aboveground solvent-storage area,
- Corrosive and hydrogen peroxide-storage area,
- Neutralization pit, pump pits, and sumps,
- Railroad spur area,
- Freon blending area,
- Loading platforms and truck pit,
- Underground distribution lines,
- Parking lot area (background), and
- Underlying aquifer.

A description of the drilling and sampling procedures are presented in Appendix A. Boring logs are presented in Appendix B.

The initial drilling program was based on information obtained by MES during the previous site investigations. Approximately 3 deep borings and 31 shallow borings were initially planned for the investigation. The 3 deep borings (70 to 90 feet bgs) were planned to provide information on the subsurface lithology and the configuration of a clay layer encountered by MES, suspected to occur at a depth of approximately 30 feet bgs. The borings were planned to be converted to groundwater monitoring wells to assess the condition of the underlying aquifer. The shallow borings (30 to 35 feet bgs) were to be drilled to assess shallow subsurface conditions. A maximum of 15 of the shallow borings were to be converted to groundwater monitoring wells to assess the conditions in the perched groundwater zone encountered by MES.

Because perched groundwater was not encountered across the majority of the site, the borings, initially planned to terminate at 30 to 35 feet bgs, were extended to depths of approximately 40 to 60 feet. Most of the proposed perched groundwater monitoring wells were installed in the underlying aquifer. Four of the proposed borings, including those planned for the UST area, were not drilled (SB-22, SB-28, SB-29 and SB-31).

Three soil borings, SB-25 through SB-27, were drilled during the first phase at the perimeters of the UST area. Because of the limited space between the tanks, drilling within the UST area was not attempted. The borings were drilled to a depth of approximately 50 feet bgs.

Six soil borings were drilled and sampled to assess the impacts associated with the aboveground solvent-storage area. During the first phase, Soil Borings SB-23, SB-24 and SB-30 were drilled within the bermed area to depths of 66, 49, and 52 feet, respectively. Soil Borings SB-36 through SB-38 were drilled in the second phase after solvent-impacted soil was detected in samples from the initial three borings. Soil Borings SB-36 and SB-38 were drilled to the north and northwest of the bermed solvent-storage area to total depths of 65 and 50 feet respectively, in order to evaluate the lateral boundaries of the impacted soil. Soil Boring SB-37 was drilled inside the bermed area to assess the vertical distribution of solvents detected. Because perched water was encountered during the drilling of SB-37, this boring was terminated at 32 feet bgs and converted to a perched-zone monitoring well.

Four deep and three shallow borings were drilled in the corrosive and hydrogen peroxide bermed storage area. Initially four deep borings SB-16 through SB-18 and SB-21 were drilled to depths of 58.5 feet, 65 feet, 41.5 feet, and 46 feet bgs, respectively. During the second phase, soil Borings SB-33 through SB-35 were subsequently drilled in the northeastern section of the bermed area that had been inaccessible prior to the removal of the aboveground storage tanks. These three borings were terminated at 15 feet bgs based on the analytical results from the initial four borings and field pH screening during drilling.

Three borings were drilled and sampled adjacent to identified pits and sumps. Boring SB-4 was drilled next to the runoff-control sump to a depth of 61 feet. Boring SB-6 was drilled

next to the pipe-trench sump to a depth of 52 feet, and SB-8 was drilled to a depth of 44 feet adjacent to the neutralization and pump pits.

Seven borings were drilled along the two railroad spurs within the site. Four soil borings, SB-2, SB-5, SB-7, and SB-9, were drilled along the northern railroad spur. Borings SB-2 and SB-9 were drilled to a depth of 41 feet bgs, while Borings SB-5 and SB-7 were drilled to depths of approximately 65 feet bgs. Three Soil Borings, SB-10, SB-11, and SB-20, were drilled along the western railroad spur. Boring SB-11 was drilled to a depth of 42 feet, while Borings SB-10 and SB-20 were drilled to a depth of approximately 66 feet bgs.

Boring SB-3 was drilled to a depth of 51 feet bgs within the bermed Freon-blending area.

Four soil borings were drilled at locations associated with the loading platforms, truck pit, and underground fuel tank. SB-13 was drilled next to the underground diesel tank to a depth of 65 feet. Soil Borings SB-14, SB-15, and SB-19 were drilled near the loading platforms and truck pit to a depth of 42 feet.

Soil Borings SB-39 through SB-42 were drilled during the second phase next to fill ports and/or along the trace of the subsurface distribution lines that connect the northern railroad spur to the underground storage tank area. These four borings were drilled to depths of 10 feet.

To assess background conditions in the soil and vadose zone, three borings were drilled in the parking area along the eastern side of the site. Boring SB-1 was drilled in the northeast corner of the site, and SB-12 was drilled in the southeast corner. The borings were drilled to depths of 45 and 42 feet, respectively. A third boring, SB-32, was drilled between SB-1 and SB-2 in the northeastern corner of the site to assess a localized zone of perched water detected during the drilling and sampling of SB-2. SB-32 was drilled to a depth of 42 feet.

Three deep borings MW-1 through MW-3 were drilled and continuously cored to a depth of approximately 72 feet to permit detailed description and identification of the site stratigraphy and to assess the conditions of the underlying aquifer zone. MW-1 was situated

along the southern boundary, MW-2 along the eastern, and MW-3 in the northwest corner of the site. Twelve-inch-diameter conductor casing was installed to a depth of approximately 40 feet using a bucket-auger drilling rig to seal off a perched groundwater zone identified in the previous investigations by MES.

#### **2.4.3 Soil Analysis Program**

Selected soil samples collected during both phases of drilling were submitted to laboratories for both physical properties and chemical analytical testing. A summary of the physical property tests and chemical analytical analyses conducted is presented in Table 10.

##### **2.4.3.1 Physical Property Tests**

Thirty-nine samples were selected for physical property testing by HLA's geotechnical laboratory. These samples were tested for dry density (ASTM D-2937), moisture content (ASTM D-2216-80), and grain-size distribution (ASTM D-422-63). In addition, seven samples were tested for hydraulic conductivity.

##### **2.4.3.2 Chemical Analysis**

Ninety-eight soil samples were submitted to Analytical Technologies, Inc. (ATI), in San Diego, California, for chemical analysis. All soil samples were submitted under chain-of-custody procedures. In general, two soil samples were selected from each boring for analysis. Samples were analyzed using one or more of the following methods:

- EPA Method 8240 - Volatile organic compounds,
- EPA Method 8270 - Semi-volatile compounds,
- EPA Method 8015 modified - Glycols,
- EPA Method 418.1 - Petroleum hydrocarbons,
- EPA Method 9045 - pH, and
- EPA Method 300.0/6010 - Selected soil ions, metals.

Soil samples collected from borings drilled in the first phase of the investigation in the UST area, the aboveground storage tank area, and the Freon-blending area were analyzed for volatile and semivolatile organic compounds, glycols, and petroleum hydrocarbons. Based on the results from the first-phase borings, the samples collected from the three additional borings in the aboveground solvent-storage area were only analyzed for VOCs.

All soil samples collected in the corrosive and hydrogen peroxide bermed storage area were only analyzed for pH and selected ions and metals, with the exception of the two samples from SB-21, which were additionally analyzed for volatile and semivolatile organics, glycols, and petroleum hydrocarbons.

Samples collected from the four shallow borings along the subsurface distribution lines were only tested for volatile organics.

Subsurface samples collected from all other borings and the eight surface samples, were analyzed using the entire suite of methods listed above.

## 2.5 GROUNDWATER INVESTIGATION

The groundwater investigation program consisted of the installation, monitoring, and sampling of a total of 18 onsite groundwater monitoring wells. Two wells were installed in a discontinuous perched-water zone encountered at two locations within the site. Twelve wells were installed in the upper portion of the underlying aquifer zone. Four additional wells were installed in the aquifer, two at an intermediate depth, and two at the bottom of the aquifer, to assess vertical hydraulic and chemical distribution characteristics. The monitoring well program was augmented by the collection of water samples using a HydroPunch sampling device. HydroPunch samples were collected at five onsite locations and twelve offsite locations. Surface-water samples were also collected from the unlined drainage channel along the northern boundary of the site. Locations of the onsite monitoring wells, the onsite and offsite HydroPunch samples, and the surface-water samples are shown on Plate 6.

### **2.5.1 Surface Water**

Two surface-water samples (SW-01 and SW-02) were collected on June 23, 1990, from water ponding near the northwest corner of the site in the unlined drainage channel.

### **2.5.2 Monitoring Well Installation**

A summary of monitoring well construction details is presented in Table 11.

Well installation procedures are described in Appendix A. Well completion diagrams are provided in Appendix B.

#### **2.5.2.1 Perched Zone Wells**

Perched water was encountered twice during the soil drilling activities at the site. In the northeast corner of the site, SB-32 was drilled and converted to a perched-zone monitoring well after perched water was detected at a depth of 35 feet bgs in nearby SB-2. SB-32 is screened over a 20 foot interval from a depth of 20 to 40 feet bgs. During the second phase investigation in the aboveground solvent-storage tank area, a localized zone of perched water was encountered while drilling SB-37. This boring was terminated at a depth of 31 feet and converted to a perched-zone monitoring well. SB-37 is screened over a 10-foot interval from a depth of 21 to 31 feet bgs.

#### **2.5.2.2 Aquifer Zone Wells**

Twelve wells were installed in the upper part of the aquifer zone. The first three wells installed, MW-1 through MW-3, were installed inside an 18-inch steel conductor casing set to a depth of approximately 42 feet bgs in anticipation of the existence of a perched-water zone identified during previous investigations by MES. The wells are screened over a 25-foot interval from approximately 45 to 70 feet bgs.

Eight additional soil borings, SB-4, SB-7, SB-10, SB-13, SB-17, SB-20, SB-23, and SB-25, originally planned for conversion to perched-zone monitoring wells, were extended and

installed as wells to monitor the upper zone of the underlying aquifer. Soil Boring SB-36, drilled during the second phase of the investigation, was also converted into a monitoring well. These wells were installed without conductor casing (no perched water was encountered) to an average depth of 64 feet bgs. The wells are screened over a 20-foot interval from a depth of approximately 44 to 64 feet bgs.

### **2.5.2.3 Well Nest Installation**

Two intermediate depth wells (SB-17B and SB-23B), together with two deep wells (SB-17A and SB-23A), were installed during the second phase of the investigation to monitor groundwater conditions near the middle and at the base of the aquifer zone. These wells were located next to existing wells SB-17 and SB-23, which monitor the upper portion of the aquifer, to form two well nests. These well nests were used to evaluate the potential for stratification of the contaminants within the aquifer unit.

Wells SB-23, SB-23A, and SB-23B are located immediately downgradient of the aboveground solvent-storage area. Wells SB-17, SB-17A, and SB-17B are located downgradient of SB-23, SB-23A, and SB-23B. Wells SB-17B and SB-23B were drilled to depths of 91 and 97 feet, respectively. Both of these wells are screened over a 5-foot interval, from a depth of approximately 85 to 90 feet in well SB-17B, and from a depth of approximately 90 to 95 feet in SB-23B. Wells SB-17A and SB-23A were drilled to depths of 130 feet each. Both wells were screened over a 5-foot interval from approximately 111 to 116 feet in SB-17A and from a depth of approximately 122 to 127 feet in SB-23A. All four wells were installed inside an 18-inch conductor casing which extend to depths of 33 feet (SB-23A, SB-23B) and 40 feet (SB-17A, SB-17B). Both the deep and the intermediate wells were installed using a combination of bucket-auger and mud-rotary drilling techniques.

### **2.5.3 CPT/HydroPunch Investigation**

Additional groundwater samples from the upper portion of the aquifer zone were collected at seventeen locations using a HydroPunch sampling system. Surveyed locations of

CPT/HydroPunch samples are shown on Plate 6. A description of the CPT/HydroPunch sampling method and the logs of the CPT probes are provided in Appendix C.

Prior to driving the HydroPunch sampler to the required depth, a standard cone penetration (CPT) was made to the required depth to provide a detailed continuous profile of the soils encountered at each location. The CPT/HydroPunch investigation was conducted in three phases as a result of difficulties in acquiring offsite access. The first six CPT probes (CPT-1 through CPT-6) were conducted onsite in April 1991. The first probe, CPT-1, was driven adjacent to existing monitoring well MW-1, which had been continuously cored. This permitted: (1) the CPT response to be "calibrated" to the previous boring results and (2) comparison of the groundwater sample collected with the HydroPunch to the results obtained from the water sample collected from Monitoring Well MW-1. The second phase of CPT/HydroPunch sampling was conducted at five offsite locations (CPT-7 through CPT-11) in September 1991. CPT-7 through CPT-9 were situated upgradient of the site in the Southern Pacific Railroad right-of-way and downgradient of the neighboring Angeles. At locations CPT-7 through CPT-9, the CPT probe was unable to penetrate below 25 feet in depth. In order to deploy the HydroPunch sampler in the top of the aquifer, a standard hollow-stem drilling rig was used to drill to the top of the underlying aquifer and then to push the HydroPunch sampler into the aquifer for collection of the water samples. CPT-10 was situated downgradient, south of the site, on property owned by Fontaine Trucking Company. CPT-11 was situated downgradient, southwest of the site next to Dice Road, on agricultural property owned by Liquid Air Corporation. Because the majority of this agricultural land was under cultivation in September, seven additional CPT probes planned for the agricultural land were postponed until November 1991. In November 1991, the final seven offsite CPT/HydroPunch samples (CPT-12 through CPT-18) were collected.

#### **2.5.4 Groundwater Monitoring and Analysis Program**

Onsite groundwater monitoring wells were monitored for depth to groundwater 14 times during the period from June 1990 through April 1991. During the same period, three rounds of groundwater sampling were conducted. Groundwater samples were collected using procedures as described in Appendix A and were submitted under chain-of-custody protocol

to ATI for analysis. Samples collected in the first round of sampling conducted in August 1990 were analyzed using the following EPA methods:

- EPA Method 8240 - Volatile organic compounds,
- EPA Method 8270 - Semi-volatile compounds,
- EPA Method 8015 modified - Glycols,
- EPA Method 418.1 - Petroleum hydrocarbons,
- EPA Method 150.1 - pH,
- EPA Method 9050 - Conductivity,
- EPA Method 160.1 - Total dissolved solids,
- EPA Method 9036 - Sulfate,
- EPA Method 425.1 - Surfactants, and
- EPA Method 300.0/6010 - General minerals, selected metals.

Groundwater samples collected during subsequent sampling rounds were analyzed for volatile organics using EPA Method 8240 with selected samples being analyzed for general minerals and pH. Hydropunch groundwater samples collected from onsite and offsite locations were analyzed for volatile organics using EPA Method 8240. A summary of the monitoring well and Hydropunch monitoring, sampling, and analysis schedule is provided in Table 12.

#### **2.5.5 Aquifer Testing**

On August 15 and 16, 1990, HLA performed slug tests in Monitoring Wells MW-1 through MW-3, SB-4, SB-7, SB-13, SB-17, and SB-32 to assess aquifer hydraulic conductivity. Slug test methods are presented in Appendix A-7.

On February 12 and 14, 1991, pump-out tests were conducted during the sampling of Wells SB-17, SB-17A, SB-17B, and Wells SB-23, SB-23A, and SB-23B to further assess aquifer hydraulic conductivity. Pumpout test methods are described in Appendix A-7.

## 2.6 QUALITY ASSURANCE PROGRAM

A quality assurance/quality control (QA/QC) program was implemented to assure reliability of monitoring and measurement data. Reports documenting field investigation activities were prepared daily by field personnel and reviewed by the project manager. All field equipment used in the monitoring of site conditions and in the monitoring and collection of samples was calibrated on a regular basis. Duplicate samples, trip blanks, field blanks, and equipment blanks were collected and analyzed on a regular basis. Laboratory QA data used to evaluate the precision, accuracy, and completeness of the data included reagent blanks, matrix spikes, matrix spike duplicates, surrogate recoveries, and gas chromatograms. The quality assurance project plan (QAPP) and the project procedures manual (PPM) were presented in Appendix C of the Work Plan.

### 3.0 PHYSICAL CHARACTERISTICS OF STUDY AREA

#### 3.1 DEMOGRAPHY AND LAND USE

The site is bounded immediately to the east by Sorensen Avenue and a newly constructed light industrial park; to the south by Fontaine Trucking Company; to the west by an agricultural lot (owned by Liquid Air Corporation); and to the north by an unlined drainage channel, a Southern Pacific Transportation Company railroad easement (spur line), and Angeles. The site vicinity is heavily industrialized, especially to the southeast, south, west, and north. The area to the northeast of the site is currently being used for new car preparation. A few single-family residences are located 1/4-mile southwest of the site, but the nearest residential area is located more than 2 miles west of the site.

The site is located approximately 1/2-mile north of the northern extent of the Santa Fe Springs Oil Field, a producing Supergiant, and approximately 2 miles southeast of the San Gabriel River Groundwater Percolation Basin.

#### 3.2 SURFACE FEATURES

The former McKesson facility occupies approximately 4.3 acres in a largely industrialized area of Santa Fe Springs, California. The site is secured with a fence which surrounds the perimeter of the property. The working portions of the site are paved with asphaltic concrete and concrete. The front of the property, facing Sorensen Avenue, is landscaped with plants and shrubbery and contains a parking lot. The Freon-blending area, the neutralization pit, the runoff-control sump, the loading areas, pipe-trench sump, truck pit, parking lot, UST area, the eastern portion of the aboveground solvent storage tank area, and intervening areas are all paved with concrete and/or asphalt. The railroad spurs (northern and western) are underlain with a gravel base as are the corrosive/hydrogen peroxide and aboveground solvent- storage bermed area.

The facility layout is illustrated on Plate 3. Aboveground chemical storage tanks (now demolished) were contained within approximately 2- to 3-foot-high concrete containment

berms and separated by internal dike walls. These tanks have been generally grouped into: (1) the corrosives/hydrogen peroxide storage area, (2) the aboveground solvent-storage area, and (3) the Freon-blending area. USTs (presently in-place) are predominantly located immediately to the east of the bermed aboveground solvent-storage area. An underground solvent-collection tank and an underground diesel tank are located immediately south of the aboveground solvent storage area and approximately 80 feet south of the southern extent of the UST area, respectively. Solvents were packaged in the solvent-packaging shed located immediately south of the aboveground solvent-storage area; excess and various waste solvents were temporarily stored in the solvent-collection tank.

Railroad spurs, previously used to transport chemicals of various types onto the facility, are located along the northern and western boundaries of the site. A number of loading platforms, a pipe-trench pump, and subsurface distribution lines were associated with offloading of chemicals delivered via the railroad spurs.

### 3.3 METEOROLOGY

The principal and recurring windflow pattern experienced in the South Coast Air Basin (SCAB) is the daily sea breeze and land breeze circulation regime that exists all year. However, the characteristic onshore and offshore windflow pattern has a seasonal dependence. Essentially, in summer, the typical air breeze is about twice as strong as the return windflow (drainage land breeze) and is of greater duration. During winter, the drainage land breeze typically achieves maximum strength and duration and exhibits well organized flow characteristics as it moves from the inland mountain slopes to the ocean.

The following meteorological conclusions are based on approximately 5 years of wind data recorded by the South Coast Air Quality Management District (SCAQMD) at their Whittier Air Monitoring Station (McKesson, 1983); located about 3 miles from the McKesson site:

- Approximately 28 percent of the yearly wind flow originates from the sector south-southeast through south-southwest,

- Over 17 percent of the yearly wind flow originates from the sector west-southwest through west, and
- Offshore or drainage wind flow from the sector east-northeast through east accounts for over 15 percent of the yearly winds.

Meteorological data monitored onsite from April 27 to May 18, 1990 (Table 13) exhibit excellent agreement with long-term climatological data recorded at the Whittier Air Monitoring Station operated by the SCAQMD. Both the SCAQMD data and the McKesson windflow profile indicated a clear bimodal characteristic in wind direction. The McKesson wind data show a predominance in windflow direction from the sector south-southwest through west, with nearly 50 percent of the wind originating from this sector. However, winds from the sector east-southeast through south-southeast account for approximately 28 percent of the windflow experienced at the site. The southeast sector winds generally represent the early formation stages of the daily sea breeze. The strong, well developed, mid- to late-afternoon sea breeze winds are represented by the southwest sector winds. The relative lack of northeast sector windflow is considered typical for the early summer season during which the air-monitoring program was conducted.

Hourly averaged windspeed and direction data recorded at the site during ambient air-sample collection intervals are presented in Table 14. Winds experienced at the site during the 24-hour sampling interval beginning on May 16, 1990, were predominantly from the west at an average speed of 3.5 mph. Wind direction recorded during the 8-hour drainage windflow interval beginning on May 17, 1990, indicates the existence of light northerly component winds at average speeds of 3 mph or less. The wind record clearly indicates that the air-sampler systems were positioned at representative downwind locations during sample collection.

None of the target VOCs were detected at concentrations above the EPA Method 8240 detection limits in any of the 24- and 8-hour ambient air samples collected during the period of May 16 to 24, 1991. Analytical results are presented in Appendix I.

### 3.4 SURFACE-WATER HYDROLOGY

Surface waters in the site vicinity are intermittent and primarily limited to runoff associated with precipitation and irrigation. All of the ground surface at the site is paved, except for the interior of the bermed aboveground solvent-tank area and the bermed corrosive and hydrogen peroxide storage areas which have gravel surfaces. Runoff from the McKesson site is discharged into the unlined drainage channel along the northern property line. This drainage channel flows generally to the east and serves as the discharge point for most of the industrial facilities located adjacent to it.

### 3.5 GEOLOGY

#### 3.5.1 Regional Geologic Setting

The facility is located on the Santa Fe Springs Plain area of the Los Angeles Coastal Plain (Plate 7). The Santa Fe Springs Plain has been slightly warped by the Santa Fe Springs-Coyote Hills anticlinal system and dips gently to the northeast in the vicinity of the site. Prominent area features include the Puente and Coyote Hills to the northeast, east, and southeast; and the San Gabriel River to the west. The Coastal Plain area generally consists of alluvial materials deposited by the Los Angeles, San Gabriel, and Santa Ana Rivers during the late Pleistocene\*. A generalized cross-section of the Los Angeles Coastal Plain is presented on Plate 8.

#### 3.5.2 Local Geologic Setting

In the site vicinity, the Santa Fe Springs Plain consists of the late Pleistocene alluvium of the Lakewood Formation. The Lakewood Formation unconformably overlies the lower Pleistocene San Pedro Formation, and the Pliocene\*\* Pico.

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\* Pleistocene = 0.01 to 2 million years before present

\*\* Pliocene = 2 to 5 million years before present

The Lakewood Formation consists of interbedded clays, silts, silty sands, and sands representative of stream-type alluvial and flood-plain deposits. In the site vicinity, the Lakewood Formation ranges from 40 to 50 feet thick. The Gage aquifer is contained in the Lakewood Formation and generally occurs near the base of the formation. The Gage aquifer is approximately 30 feet thick in the site vicinity.

The early Pleistocene San Pedro Formation underlying most of the Coastal Plain of Los Angeles County is approximately 750 feet thick in the site vicinity and consists of stratified silt, silty sand, sand, and gravel. The formation has been divided into various stratigraphic units or members (aquicludes and aquifers); only the aquifers have been named. In downward succession the aquifers are: the Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside.

The discontinuous Hollydale aquifer consists of silty sand and sand. Maximum thickness in the Los Angeles Coastal Plain is approximately 100 feet.

The Jefferson aquifer underlies the Hollydale and is separated from it by aquicludes of the San Pedro Formation. Sediments within the aquifer consist of clayey sand, sand, and gravelly sand.

The three deeper aquifers (the Lynwood, Silverado, and Sunnyside) are the major water-producing zones in the area. The aquifers range in thickness from less than 50 to 500 feet. Aquifer sediments generally consist of coarse-grained sands and gravels interbedded with lenses of silt and clay. These aquifers have all been affected, to some extent, by structural folding and faulting. Structural lows, created by faulting and synclinal folding, have formed groundwater reservoirs in these zones.

### 3.6 SOILS

#### 3.6.1 Onsite Soils

Borings drilled and logged as part of this investigation confirm the regional and local geologic setting of the site. A generalized stratigraphic column of the site is presented on Plate 9. Plate 10 shows the location of the geologic cross-sections across the site (Plates 11 through 14). Results of the physical property tests are summarized in Table 15. Laboratory reports are presented in Appendix J.

Shallow, near-surface materials underlying the site consist predominantly of silty sand, with minor amounts of silt and clay. Poorly sorted, fine- to coarse-grained sand (locally with gravel) underlie the fine-grained surficial deposits from depths between 15 and 25 to 30 feet bgs. These sand deposits (referred to as the upper sand zone) appear to form a northwest-southeast trending channel feature. A structural contour map depicting the base of this upper sand unit is shown on Plate 15. This upper sand zone is interpreted to be the Gage Aquifer which is stratigraphically positioned at the bottom of the Lakewood formation. Groundwater was not encountered in this unit except in the northeast corner of the site (SB-2 and MW-32) and, for a limited time, at MW-37. Below the upper sand unit a zone of discontinuous silt, clay, and silty sand units are encountered to depths of approximately 45 to 50 feet bgs. Beneath this zone of discontinuous units, a fine- to medium-grained sand is present. This sand unit, referred to as the aquifer sand, is continuous across the site and is approximately 75 feet thick, extending to depths of 117 and 126 feet bgs at locations MW-17A and MW-23A, respectively. A localized, discontinuous silt zone was present in MW-23A at a depth of 78 to 85 feet. This aquifer sand is water-bearing, (groundwater being encountered at depths between 48 and 50 feet bgs), and is interpreted as being the Hollydale aquifer, the upper-most aquifer of the San Pedro formation. A cross-section of the Hollydale aquifer is presented on Plate 16. A structural contour map of the top of the aquifer sand is presented on Plate 17.

### 3.6.2 Offsite Soils

CPT data collected during onsite and offsite groundwater sampling activities were interpreted to identify the lithology encountered. The interpreted CPT logs are presented in Appendix D and a fence diagram depicting the offsite extension of the four major zones onsite is presented on Plate 18. Subsurface investigations conducted at nearby facilities, including Southern California Chemical Company (Kleinfelder, 1986a), Diversey-Wyandotte Corporation (Kleinfelder, 1986b) and Angeles Chemical Corporation (SCS, 1991), indicate that the four general lithologic zones identified at the McKesson site extend throughout the local vicinity.

## 3.7 HYDROGEOLOGY

Two identifiable aquifer sands were encountered during this investigation, the Gage aquifer and the Hollydale. This section presents regional setting and water quality data and local hydrogeologic characteristics of these units.

### 3.7.1 Regional Hydrogeologic Setting

The succession of aquifers in the vicinity of the site are depicted on Plate 8. The uppermost aquifer sand in this region of the Santa Fe Springs Plain is the Gage aquifer, which occurs near the base of the Lakewood formation. Permeable zones within this aquifer are discontinuous, and the aquifer is not generally considered to be a source of drinking water (California Department of Water Resources [DWR], 1961). The Gage aquifer occurs at a depth of approximately 15 to 20 feet bgs and is approximately 15 feet thick in the vicinity of the site.

Separated from the Gage aquifer by an aquiclude of the uppermost part of the San Pedro formation, is the Hollydale aquifer. The Hollydale aquifer has been characterized as irregular, sinuous, and meander-like. Generally the Hollydale is not considered to yield large quantities of water because of its lack of continuity. Dominant recharge of the Hollydale occurs northeast of the site where the Hollydale merges with the overlying Gage aquifer.

About 1 to 2 miles southwest of the site, the Hollydale aquifer would appear to merge with the underlying Jefferson aquifer in the vicinity of the San Gabriel River. Neither the Hollydale nor the Jefferson aquifers are considered important water-producing aquifers, with less than 10 percent of the wells in the Central Basin being perforated in these zones.

The major water-producing aquifers within this region are located below the Jefferson aquifer and are, in downward succession, the Lynwood, Silverado, and Sunnyside aquifers. Groundwater gradients observed in all aquifers in the San Pedro formation are generally to the southwest.

### **3.7.2 Regional Water Quality**

There are four production water wells operated by the City of Santa Fe Springs located within the Santa Fe Springs city limits. Of the four wells, the only one that draws water from the Hollydale aquifer is located approximately 9 miles south of the site. Water samples taken in November 1989 did not detect VOCs.

Santa Fe Springs Well No. 4 is located on Telegraph and Pioneer Road, approximately 2.5 miles southwest of the site. This well draws water from the Lynwood, Silverado, and Sunnyside aquifers. Water samples taken from this well in May 1991 indicated that no organic chemicals were present.

Santa Fe Springs Well No. 1, located near the corner of Burke Street and Dice Road approximately 0.5 miles north of the site, draws water from the Silverado and Sunnyside aquifers. Water quality data from samples taken in June 1991 indicate the presence 1.1 ug/L of TCE. No other chemicals of concern were detected.

Santa Fe Springs Well 304 WI, located approximately 2 miles west of the site, draws water from the Silverado aquifer. Water-quality data from samples taken in May 1991 indicate 0.5 ug/L TCE and 1.6 ug/L PCE. No other chemicals of concern were detected.

Two wells owned by the City of Whittier are located approximately 7 miles due north of the site. These wells draw water from 55 and 120 feet bgs, in what is probably the Gaspar aquifer. Water analyses from both wells did not detect VOCs.

### **3.7.3 Local Hydrogeologic Setting**

The Gage aquifer, identified at the site as the upper sand zone, was dry during this site investigation, except for isolated areas of perched water continuously present in the northeast corner of the site and periodically encountered in the aboveground solvent storage tank area. Offsite, perched water was detected in the eastern side of the Angeles site as reported in the SCS investigation. The presence of water in this unit is most likely seasonal and related to rainfall activity.

This unit is separated from the underlying Hollydale aquifer by a zone of discontinuous silts, clays, and silty sands. Permeability tests conducted on samples from this zone listed on Table 15 indicate that this zone would serve as an effective aquitard between the overlying high permeable sands of the Gage aquifer and the underlying high permeable sands of the Hollydale aquifer. Groundwater encountered at the site was in the lower sand identified as the Hollydale aquifer.

Well monitoring data are summarized in Table 16. Potentiometric surface maps were constructed for four of the periods monitored and are presented on Plates 19a to 19d. The local horizontal groundwater gradient determined from these data is typically to the southwest at a value of 0.005 foot-per-foot. Potentiometric data collected from the two well nests Wells SB-17/A/B and SB-23/A/B indicate a slight downward vertical gradient of 0.004 foot-per-foot. Hydrographs of water elevation changes observed in selected wells are shown on Plates 20a to 20c.

Over the time period of this investigation, groundwater elevations in the aquifer zone remained relatively constant until March-April 1991, when the groundwater elevations rose. This observed increase can be related to the rain during the first part of 1991.

Evaluation of groundwater monitoring data collected during the monitoring periods supports the hydrogeologic separation of the perched groundwater zone from the aquifer zone. The groundwater elevations measured in SB-32, completed in the perched groundwater zone, reflect a strong dependence on seasonal rainfall activity, illustrated by a steep decline during drought months followed by a rapid increase immediately following a rain event in February 1991. Data from groundwater monitoring wells completed in the underlying aquifer exhibit a much more constant potentiometric level and a less severe rise associated with the rainfall event.

#### **3.7.4 Aquifer Test Results**

Results of slug tests conducted in Wells MW-1 through MW-3, SB-4, SB-7, SB-13, and SB-17 indicated that the hydraulic conductivity of the lower aquifer was too great to measure using this test method. Water levels recovered within seconds of lowering the slug mandrel into the water column. A slug test performed on Monitoring Well SB-32 (screened in the perched zone) indicated a hydraulic conductivity of 4.2 gallons per day per square foot (gpd/ft<sup>2</sup>) corresponding to a transmissivity of 25 gallons per day per foot (gpd/ft). The low hydraulic conductivity in the perched zone in contrast with the high hydraulic conductivity in the lower aquifer supports the assertion that the two aquifers are hydrogeologically distinct.

Pumpout testing in cluster Wells SB-17, SB-17A, SB-23, SB-23A, and SB-23B indicated hydraulic conductivity values in the lower aquifer ranged from approximately 64 to 440 gpd/ft<sup>2</sup>, with transmissivity values ranging from 5,200 to 33,000 gpd/ft (see Appendix H for aquifer test analyses). Hydraulic conductivity/transmissivity values were lower in the more shallow cluster wells (SB-17 and SB-23) possibly due to a decreased efficiency in the PVC slotted casing as opposed to the more efficient stainless-steel screen in Monitoring Well SB-17A and SB-23A. The transmissivity values for the deeper cluster wells are comparable to the results of field tests conducted on wells at the Southern California Chemical Company located approximately 1/4 mile to the northwest of the site. Transmissivity values at these wells ranged from 32,100 to 44,700 gpd/ft (Kleinfelder, 1986).

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Aquifer test data from Wells SB-17B and SB-23B were not analyzed because of malfunctioning equipment.

#### 4.0 NATURE AND EXTENT OF CHEMICALS

##### 4.1 SOURCE AREAS

Elevated concentrations of organic chemicals detected in the soil and groundwater samples collected during this investigation indicate the presence of one primary onsite source area for the observed soil and groundwater chemical concentrations, and at least one offsite source area that contributes to both the observed onsite and offsite groundwater concentrations.

###### 4.1.1 Onsite Source Area

The highest concentrations of chlorinated organic compounds were detected in the aboveground solvent storage area. This area was focused on in the previous onsite investigations conducted by MES. The other areas investigated onsite do not appear to have served as significant source areas for the observed chemical concentrations.

###### 4.1.2 Offsite Source Area

Chemical analysis of upgradient groundwater samples and samples collected offsite, cross-gradient of the McKesson site, indicate the presence of an upgradient, offsite source contributing to the observed groundwater condition. A previous investigation of Angeles, located immediately north and upgradient of the McKesson site, revealed the presence of significant soil contamination to depths of over 40 feet. Analytes detected in the groundwater downgradient of Angeles are similar to those previously detected in the soil at Angeles. It appears, therefore, that Angeles has served as an offsite, upgradient source for some of the compounds detected during this investigation.

## 4.2 SOIL AND VADOSE ZONE

Results of the chemical analysis of soil samples collected during this investigation are summarized in Tables 17a through 17d. Analytical laboratory reports and chain-of-custody documents are presented in Appendix K.

### 4.2.1 Inorganic Impacts to Soil

Shallow and isolated evidence of historic releases and treatment of acidic compounds was detected within the bermed, corrosive, and hydrogen peroxide storage area. Low pH levels ranging from 4.2 to 4.4 were detected in 3 of the 17 samples tested from this area. These three samples, collected from Borings SB-16 at 6 feet bgs, SB-17 at 1.5 feet bgs, and SB-34 at 5 feet bgs, also exhibited elevated sulfate levels (5620 to 9270 milligrams per kilogram [mg/kg]) and most likely reflect the impact of a sulfuric acid release. One sample, collected from Boring SB-33 at a depth of 1.5 feet bgs, exhibited a high pH value of 10. This sample also exhibited elevated sodium and sulfate levels (4730 and 1730 mg/kg, respectively) and might reflect the use of soda ash in the treatment of an acid release. Two additional samples (Borings SB-18 and SB-35, both from 1.5 feet bgs) also exhibited elevated sodium and sulfate levels, however, they showed pH values of 8.4 and 8.2, both within the range observed over the remainder of the site. Impacts related to the use of acidic or inorganic compounds appear to be surficial and limited to the interior of the bermed corrosive-storage area.

### 4.2.2 Organic Impacts to Soil

VOCs, specifically chlorinated hydrocarbons, were the major class of organic compounds detected in the soil and vadose zone, with a total of 17 separate VOCs being detected. Low levels of three semivolatile organic compounds (2-methyl naphthalene, naphthalene, and benzyl alcohol), together with concentrations of TPH greater than 10 mg/kg (as quantified by method 418.1) were also detected, but in only two borings onsite, SB-24 and SB-30. Selected glycols propylene, ethylene, hexylene, and diethylene were not detected in any of the samples analyzed.

Surface soil samples collected offsite in the unlined drainage channel contained low levels of PCE ranging from 0.1 to 1.9 mg/kg. One sample collected at a depth of 1 foot bgs had a detected value of 61 mg/kg of PCE. The surface soil samples also contained low levels of Bis (2-ethyl-hexyl)-phthalate (1.9 to 4.5 mg/kg) and moderate amounts of TPH ranging from 13 to 1,400 mg/kg.

The six most prevalent compounds detected onsite were PCE, 1,1,1-TCA, TCE, DCM, 1,1-DCE, and 1,2-DCA. PCE was detected in 44 of the 98 samples analyzed (45 percent) at concentrations ranging from 0.05 to 2900 mg/kg. 1,1,1 TCA was detected in 36 samples (37 percent) at concentrations of 0.06 to 3500 mg/kg. Thirty-three samples (34 percent) contained detectable amounts of TCE at concentrations of 0.07 to 60 mg/kg, while DCM was detected in 32 samples (33 percent) at concentrations- ranging from 0.55 to 380 mg/kg. Both 1,1-DCE and 1,2-DCA were detected in 21 samples (22 percent), at concentration of 0.05 to 5.4 and 0.06 to 32 mg/kg, respectively. The concentration frequency distribution for these six compounds and number of samples with detected concentrations are presented on Plates 21a and 21b. These data indicate that high concentrations of these compounds are detected in only a very small percentage of the samples. A complete listing of the compounds detected onsite, their frequency of occurrence, and observed concentration range is provided in Table 18.

The areal distribution of all the detected compounds is generally restricted to the vicinity surrounding the aboveground solvent-storage tank area, in which approximately 80 percent of the samples analyzed contained detectable amounts of the target analytes. Samples collected from the three borings located within the bermed storage area contained the highest concentrations of 16 of the 17 compounds detected onsite. The site maximum concentrations of ten compounds 1,1,1-TCA (3,500 mg/kg), PCE (2,900 mg/kg), TCE (60 mg/kg), 1,1-DCE (5.4 mg/kg), 1,2-DCA (32 mg/kg), DCM (380 mg/kg), 1,1,2,2 PCA (31 mg/kg), ethylbenzene (50 mg/kg), chlorobenzene (170 mg/kg), and carbon tetrachloride (550 mg/kg) were detected in samples from Boring SB-30. Samples from Boring SB-24 contained the site maximum concentrations of MEK (65 mg/kg), acetone (120 mg/kg), toluene (130 mg/kg), and xylenes (160 mg/kg). Samples from Boring SB-37 contained the site maximum

concentration of 1,1-DCA (0.63 mg/kg), and the only sample in which benzene (0.07 mg/kg) was detected.

Minor, isolated occurrences of acetone and MEK are also evident in shallow soil samples collected in Boring SB-42, situated along the subsurface distribution lines.

Soil concentration maps for 1,1,1 TCA; PCE; TCE; DCM; 1,1-DCE; and 1,2-DCA are presented on Plates 22 through 27, respectively. Data collected at two depth intervals (20 to 25 feet and 40 to 45 feet bgs) are presented in these plates. As shown on these plates, the detected concentrations of these compounds decrease with depth, while the areal extent of the impacted zone increases. Concentration data for 1,1,1 TCA and PCE are presented in cross-section on Plates 28 and 29. Lateral extension of the impacted soil zone is evident along base of the upper sand zone and along the upper capillary fringe zone of the lower aquifer sand.

#### **4.3 GROUNDWATER**

Results of the chemical analysis of groundwater samples collected during this investigation are summarized in Tables 19a through 19d. Laboratory reports and chain-of-custody forms are presented in Appendix L.

##### **4.3.1 General Mineral Characterization**

General mineral analyses indicate that the aquifer water would not be considered potable. All groundwater samples analyzed exceeded the State secondary drinking water maximum concentration levels (MCLs) for total dissolved solids (TDS = 500 mg/L) and conductivity (900 micromhos per centimeter). Over half of the wells analyzed exceeded the MCLs for sulfate (250 mg/L) and manganese (0.05 mg/L). Two wells analyzed also exceeded the Federal EPA drinking water MCL goal for nitrate (as Nitrogen) of 10 mg/L.

The general mineral composition of the groundwater in both the perched zone and aquifer zone were compared on a trilinear Piper diagram (Plate 30), which display anion (negative

charge) and cation (positive charge) percent compositions on a milliequivalent basis. Data that group together represent similar ratios between ions and would suggest that the waters are compositionally related. Examination of Plate 30 indicates that water samples from the lower aquifer form a distinct group with approximately 60 percent sulfate ( $\text{SO}_4$ ), chloride (Cl) anions, and 70 percent calcium (Ca) and magnesium (Mg) cations. Data from perched zone Well SB-32 plots outside the group reflecting increased percentages of carbonate ( $\text{CO}_3$ ) and bicarbonate ( $\text{HCO}_3$ ) anions and lower percentages of Ca and Mg cations. These data indicate that the water in the perched zone is compositionally different (and thus separate) from the lower aquifer groundwater.

Variations in the ionic ratios of groundwater from the intermediate and deep monitoring wells SB-17A, SB-17B, SB-23A, and SB-23B, drilled using mud-rotary techniques, reflect the use of the deflocculant sodium acid pyrophosphate (SAPP) during development.

#### **4.3.2 Inorganic Impacts to Groundwater**

General uniformity of general mineral composition and pH levels in site wells indicate that there has been little or no inorganic impact to groundwater. An extremely low pH value of 2.15 reported for the initial sample collected from Well MW-01 was most likely the result of analyzing the improper sample vial. While measurements for pH are made on non-acidized vials, some samples collected from Well MW-01 were decanted into acidized vials for preservation of inorganic constituents. It is believed that an acidized vial was inadvertently used for the pH measurement. Field measurements taken during the initial sampling of this well using a calibrated pH measurement instrument indicated normal pH levels. Subsequent resampling of Well MW-01, in which the pH was monitored in the field both with the standard calibrated field equipment and litmus paper as a redundant check, indicated a more normal pH value of approximately 7.

#### **4.3.3 Organic Impacts to Groundwater**

Concentrations of only two VOCs, 1,1,1-TCA (840 and 61 ug/L) and 1,1-DCA (180 and 34 ug/L), were detected in the two surface-water samples analyzed. Phenol (65 ug/L) and 4-

methyl-phenol (27 ug/L) were detected in the same surface-water sample that contained the elevated VOC concentrations. The surface-water samples were not analyzed for TPH, however a sample of tap water (TW-01) did contain detectable TPH (0.06 ug/L).

Twenty-six VOC compounds were detected in the groundwater during this investigation. The three main classes of compounds identified were halogenated chlorinated hydrocarbons, aromatic hydrocarbons, and chlorofluorocarbons. Detected chlorinated compounds are:

- 1,1,1-TCA,
- DCM,
- PCE,
- TCE,
- 1,1-DCE,
- 1,2-DCE,
- 1,1-DCA,
- 1,2-DCA,
- 1,1,2-TCA, and
- Vinyl Chloride.

Aromatic VOCs detected include:

- Benzene,
- Toluene,
- Ethylbenzene, and
- Xylenes.

Chlorofluorocarbons detected include:

- Dichlorofluoromethane,
- Trichlorofluoromethane (Freon 11), and
- Trichlorotrifluoroethane (Freon 113).

Other VOCs detected in one or more samples included:

- Acetone,
- MIBK,
- MEK,
- Chloroform,
- Dibromochloromethane,
- Ethylmethyl-benzene and trimethyl-benzene isomers, and
- Cyclic and aliphatic hydrocarbons.

Nine of the twenty-six compounds detected during this investigation were only detected offsite. Compounds detected offsite only were:

- 1,1,2-TCA,
- MEK,
- MIBK,
- Dichlorofluoromethane,
- Trichlorotrifluoroethane, ethylmethyl-benzene, and trimethyl-benzene isomers, and
- Cyclic and aliphatic hydrocarbons.

Vinyl chloride was not detected in the aquifer but was detected in the perched zone. A listing of VOCs detected in groundwater, their frequency of occurrence, and observed concentration range is provided in Table 19e.

Only two semivolatile compounds, benzoic acid and naphthalene, were detected onsite. Benzoic acid was detected only in Well SB-23 at a concentration of 70 micrograms per liter (ug/L), while naphthalene was detected only in Wells SB-17, SB-20, and SB-23 at concentrations of 16, 10, and 14 ug/L respectively. Phenol (65 ug/L) and 4-methyl-phenol (27 ug/L) were detected in one of the two samples of surface water collected in the drainage channel. Low level TPH concentrations ranging from 0.06 to 0.62 ug/L were detected in five on-site wells (SB-4, SB-20, SB-23, SB-25, SB-32) and in the tap-water sample collected at the

site. Selected glycol compounds propylene, ethylene, hexylene, and diethylene, were not detected onsite.

The major organic compounds detected onsite in the groundwater were:

- 1,1,1-TCA (<1 to 94,000 ug/L),
- PCE (5 to 45,000 ug/L),
- TCE (7 to 11,000 ug/L),
- 1,1-DCE (<1 to 38,000 ug/L), and
- DCM (<5 to 93,000 ug/L).

Data collected from the on-site monitoring wells during the February 1991 sampling event were combined with Hydropunch sample analyses collected over the period of April through November 1991 to produce the isoconcentration maps for these five compounds presented in Plates 31 through 35. Examination of these isoconcentration maps reveals an organic plume oriented in a northeast to southwest direction extending under the site. Maximum concentrations were detected at two sampling locations situated along the axis of the plume. Maximum values of 1,1,1-TCA, PCE, and DCM were detected in Well SB-23, situated immediately downgradient of the aboveground solvent storage tank area, while the maximum concentrations of TCE and 1,1-DCE were detected at Hydropunch location CPT-13, situated offsite, downgradient of SB-23. A relatively narrow zone of high concentration values extend offsite, downgradient along the axis of the plume. High concentration values are also detected offsite, upgradient of the site.

A secondary plume, oriented in a similar northeast to southwest direction and originating from an area upgradient of the McKesson site, is evident in the isopleth for DCM. This offsite plume is situated cross-gradient of the onsite plume and extends under the agricultural property west of the site.

#### 4.3.3.1 Onsite Organic Plume Characteristics

The six most pervasive compounds detected onsite in the groundwater were:

- 1,1,1-TCA,
- PCE,
- TCE,
- 1,1-DCE,
- 1,1-DCA, and
- DCM.

Additional compounds detected onsite at least once include:

- 1,1-DCA,
- 1,2-DCA, and
- 1,2-DCE, as well as acetone, BTEX, Freon 11, and dibromochloromethane.

Analysis of samples collected from the wells completed in the middle of the aquifer (SB-17B and SB-23B) and at the bottom of the aquifer (SB-17A and SB-23A), indicates that the detected contamination is concentrated in the upper part of the aquifer. Both the number of compounds detected and their concentrations decreased significantly with depth. Only five compounds were detected in wells SB-23A and SB-23B, 1,1,1-TCA (12 and 17 ug/L), PCE (13 and 17 ug/L), TCE (7 and 67 ug/L), 1,1-DCE (2 and 2 ug/L), and toluene (10 and 10 ug/L). Only four compounds were detected further downgradient in wells SB-17A and SB-17B, 1,1,1-TCA (3 and 1 ug/L), PCE (7 and 5 ug/L), TCE (12 and 33 ug/L\*), and toluene (11 and 3 ug/L). The vertical distribution of analytes detected at the two well nests is shown on Plate 36.

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\* Duplicate sample was nondetect (<1 ug/L) for TCE

Concentration ratios of TCA/TCE, 1,2-DCE/TCE, and TCE/PCE which were determined for CPT-9 and CPT-16, located to the west of the onsite plume and downgradient of Angeles are noticeably different from those observed in the onsite plume. These samples are typified by high 1,2-DCE/TCE ratios and low TCA/TCE and TCE/PCE ratios. Samples collected from CPT-6 and MW-2, located east and slightly upgradient of the onsite plume, exhibit relatively high TCE/PCE ratios that are similar to those exhibited by samples collected west of the offsite plume at CPT-17 and CPT-18.

#### 4.4 QUALITY ASSURANCE

Sample collection procedures and laboratory analyses were evaluated by HLA personnel to validate the reliability, precision, accuracy, and completeness of data generated during this investigation. A "Data Validation Checklist" was filled out for each set of analytical results received. Items to be checked included: daily field activity logs; preservation of samples; completeness of chain-of-custody forms; condition of samples when received at the laboratory; laboratory QC data; trip, field, and equipment blanks; and field duplicates. Data validation checklists for each laboratory report are presented in Appendix M.

Results obtained from two groundwater samples were invalidated. An acidized groundwater sample MK-MW-01080190, collected from Monitoring Well MW-01 on August 1, 1990, was inappropriately analyzed for general minerals. The sample was identified by the low pH value of 2.15 and high sulfate value of 2,022 mg/L (site average = 240 ug/L). This well was resampled with acceptable results (pH= 6.93, sulfate = 249 ug/L). Results obtained from sample MK-SB-04-021191, collected from Well SB-04 in February 1991 were invalidated as the result of probable leakage of surface rainwater into the well. Results obtained were an order-of-magnitude lower than those reported during the previous two sampling events. Field log dailies reported that the well box had been covered by standing rainwater immediately prior to the sampling event, and that the well box was full of water. Evidence was found that rainwater had entered the well, thereby locally diluting the groundwater concentrations. Review of all laboratory records validated the reported analytical results.

Data from duplicate samples were compared to assess the combined effect of sampling and analysis procedures on the precision of the reported results. The relative percent difference (RPD) was calculated for measurements of 1,1,1-TCA, PCE, TCE, DCM, 1,1-DCE, and 1,1-DCA in the 13 sets of duplicate samples analyzed and are summarized in Table 22. RPD values indicated generally acceptable levels of precision for the reported results. Results for the five analytes had a combined average RPD of 16.3 percent. The combined average RPD per sample/duplicate pair was 20.4 percent. These results indicate that the high variability between the values for the sample and the duplicate sample that were sometimes observed (e.g., 88,000 versus 62,000 ug/L; RPD = 34.7%) are within the normally acceptable precision of the measurement technique.

The value reported for TCE in the sample from Well SB-17B (33 ug/L) should be considered questionable as a result of comparison with the duplicate sample analyzed (<1 ug/L), yielding an unreasonably high RPD of 194 percent.

## 5.0 CHEMICAL FATE AND TRANSPORT

The fate and transport of the chlorinated compounds detected in site soil and groundwater are influenced by their physical, chemical, and biochemical properties. These compounds are identified as having densities greater than water, viscosities less than water, low interfacial tension, high vapor pressure, and the ability to undergo biotransformations. A summary of pertinent properties associated with chlorinated hydrocarbons detected onsite is presented in Table 23. Possible biotransformations are presented on Plate 42.

### 5.1 FATE AND TRANSPORT OF CHLORINATED COMPOUNDS IN SOIL

The principle source area for introduction of compounds into the subsurface appears to have been the aboveground solvent-storage area. The highest concentrations of compounds detected in the soil at the McKesson site were in samples collected from the near surface within this bermed area. At depth, the highest detected concentrations were detected at two horizons; along or near the base of the upper sand zone, and near the capillary fringe of the Hollydale aquifer. The observed subsurface distribution can be related to the properties of these compounds and characteristics of the local subsurface geologic and hydrogeologic settings.

Liquid solvents migrated vertically downward to the base of the upper sand zone (approximately 25 feet bgs) with minimal lateral spreading. At this depth, the transition from the upper sand zone to the underlying silts and clays is characterized by a four order-of-magnitude decrease in permeability, as observed in the laboratory derived values ( $2.5 \times 10^{-3}$  to  $7.3 \times 10^{-7}$  cm/sec), which promoted the lateral spreading of liquid-phase solvents that infiltrated through the sand zone. The historic presence of perched groundwater within the upper sand zone probably also contributed to the observed lateral extent of compounds detected along the base of the upper sand zone. Liquid phase solvents entering the perched groundwater column would tend to continue to migrate downward through the water as a result of their relatively high density. They would not spread laterally along the capillary fringe. However, solvents present within the water column would tend to dissolve into the



perched groundwater and would have been able to spread laterally within the perched groundwater column by advective, dispersive, and diffusive mechanisms.

Volatilization from groundwater may have contributed to the concentrations detected at depths of 40 to 45 feet bgs, the deeper horizon in which elevated concentrations were detected. In most borings outside the aboveground solvent-storage area, compounds were only detected in the samples collected from these depths, near the top of the capillary fringe area, and not in samples collected from shallower depths. This distribution of detected compounds may be the result of volatilization from the underlying aquifer. The high vapor pressures associated with the chlorinated compounds together with the high dissolved concentrations detected in the groundwater could result in elevated concentrations of these compounds being present in the soil gas above the saturated zone. The concentrations detected in soil samples collected from depths of 40 to 45 feet bgs are in most cases lower than the concentrations that would be expected from the application of Henry's Law. Because analytical methods do not generally distinguish between the mass of a compound present in soil gas, soil moisture, or adsorbed onto the soil particles, the levels detected in samples from near the groundwater surface could reflect soil gas concentrations.

## 5.2 GROUNDWATER TRANSPORT AND CHEMICAL MIGRATION

The relative effect of groundwater transport mechanisms (advection, dispersion, and diffusion) on the migration of chemical compounds is dependent on aquifer properties including heterogeneity, permeability, and hydraulic gradient, and whether the compound is present in a dissolved or nonaqueous liquid phase. Based on analysis of boring logs and laboratory and aquifer tests, the lower aquifer sands can be characterized as being fairly homogeneous, exhibiting moderate permeability ( $2 \times 10^{-3}$  cm/sec) and a moderate lateral gradient (0.005 foot-per-foot). This condition would tend to favor advection as the dominant mechanism governing the transport of compounds instead of dispersion.

Diffusion is also likely to contribute to the transport of chemical compounds in the groundwater. The lateral distribution of relatively low concentrations of chemicals detected

on and offsite are most probably related to diffusive forces generated by the elevated concentrations of compounds detected in the groundwater.

Both relatively narrow zones of high level concentrations in the general direction of the groundwater gradient, and the cross-gradient distribution of low level concentrations illustrated in the isoconcentration contours (Plates 32 through 36), are indicative of the effects of both advection and diffusion. The slight deviation of the axis of both onsite and offsite plumes from the graphically determined gradient direction could be reflective of slight lateral heterogeneities within the aquifer sands and variation in gradient direction over time. This would not be unusual given the reported regional sinuous nature of the Hollydale unit.

## 6.0 RISK ASSESSMENT

This section presents a summary of the results of a baseline health risk assessment conducted by McLaren/ChemRisk. The key elements of McLaren/ChemRisk's assessment are summarized below. The complete risk assessment is presented in Appendix O.

A baseline health risk assessment was conducted to evaluate the potential human health risks associated with exposure to chemicals at the McKesson site in Santa Fe Springs, California. The baseline health risk assessment was prepared in a manner consistent with EPA's Risk Assessment Guidance for Superfund Volume I (EPA, 1989a) and Guidance for Establishing Target Cleanup Levels for Soils at Hazardous Waste Sites (EPA, 1988b) and Cal-EPA's Scientific and Technical Standards for Hazardous Waste Sites (Cal-EPA, 1990).

### 6.1 CHEMICALS OF CONCERN

For the purposes of the risk assessment, the former "high activity" areas of the site are segregated into three areas: Area A (the railroad spur), Area B (the solvent storage area), and Area C (corrosive/oxidizer area). Any chemical detected in greater than 5 percent of the soil samples taken from these areas is considered a soil chemical of concern. This selection criterion yielded 12 soil chemicals of concern that were quantitatively evaluated in the assessment. It is known that upgradient contamination has contributed to the presence of chemicals in groundwater at the McKesson site and downgradient from the McKesson site. Since the degree relative of contribution of onsite vs. offsite activities to the presence of chemicals in groundwater has not yet been assessed, it is not yet possible to determine the groundwater health risks that are attributed to the McKesson property. Nonetheless, health risks associated with groundwater exposure are assessed using existing groundwater concentrations.

## 6.2 POTENTIALLY EXPOSED POPULATIONS AND EXPOSURE PATHWAYS

Based on a consideration of the current site conditions, potential future uses of the site property, and the known fate and transport characteristics of the chemicals of concern, the following exposure pathways were assessed for a future onsite residential and future onsite occupational exposure scenario: soil ingestion, dermal contact with soil, and vapor inhalation. Site data were used to establish representative soil concentrations for assessing exposure via direct soil contact (soil ingestion and dermal contact) and as input to the vapor emission models. The impacted aquifer at the McKesson site is not currently used as a drinking water source and will likely not be used as such in the foreseeable future due to elevated concentrations of total dissolved solids. Accordingly, onsite and offsite incidental residential exposure to groundwater via ingestion and dermal contact (for example, if the aquifer were used as an irrigation source) is assessed to determine the risks associated with groundwater under current conditions. In order to ensure that groundwater-related health risks are not under-estimated, the maximum detected chemicals concentrations in any onsite or offsite well are used as representative groundwater concentrations. Age-specific exposure estimates (children and adults) were incorporated into the residential exposure scenario. Where applicable, suggested regulatory default values of contaminant concentrations and exposure estimates were used to assess uptake in order to approximate a "reasonable maximal scenario". Although offsite populations could theoretically be exposed to site-related compounds via vapor inhalation and contact with groundwater, offsite populations are not quantitatively evaluated in this assessment because: 1) the contribution of site-related activities to the observed groundwater chemical concentration has not yet been quantitatively determined, and 2) the distance between onsite vapor emission sources and offsite populations is such that significant exposure to site-related vapors is unlikely to occur.

## 6.3 HEALTH RISK ESTIMATES

For the soil pathways of exposure (vapor inhalation, soil ingestion, and dermal contact with soil), the total noncancer hazard indices (including all chemicals) are 1.0 or less for residents and workers. These results suggest that the soil chemicals of concern do not pose a significant noncancer hazard, according to the assumptions used in the assessment.



Estimated increased cancer risks are  $8 \times 10^{-6}$  and  $2 \times 10^{-5}$  for the occupational and onsite residential scenarios, respectively. These estimated cancer risks are well within the range of increased cancer risks that have typically been considered "insignificant" for large populations at both the State and Federal levels.

For the groundwater pathways of exposure (incidental dermal contact and ingestion), the hazard indices range from 0.1 (dermal contact by adults) to 11.0 (ingestion by children). The estimated increased cancer risks are  $3 \times 10^{-3}$  for incidental groundwater ingestion and  $1 \times 10^{-4}$  for incidental dermal contact. While these estimated risks and hazard indices exceed levels that have typically been considered "acceptable" by regulators, it is not yet known to what degree site-related chemicals contribute to these estimates.

#### 6.4 UNCERTAINTY ANALYSIS

The conservatism present in the above estimates was quantitatively evaluated using a Monte Carlo analysis of probability distribution frequencies, rather than "point" default estimates, to describe a reasonable range of values for each exposure parameter. This uncertainty analysis demonstrated that the health risk estimates derived for the "reasonable maximal scenario" were actually orders of magnitude greater than the health risks posed to a significant fraction of the potentially exposed populations. Hence, the uncertainty analysis quantitatively confirmed that there is a large degree of conservatism in the health risk estimates estimated for the "reasonable maximal scenario."

## 7.0 SUMMARY AND CONCLUSIONS

### 7.1 SUMMARY

This section summarizes the findings of the remedial investigation and baseline health-based risk assessment.

#### 7.1.1 Nature and Extent of Chemical Compounds

This investigation has identified significant impacts to vadose zone soils and groundwater by chlorinated hydrocarbon compounds. The predominant compounds detected in both the soil and groundwater are 1,1,1-TCA, PCE, TCE, and DCM. Elevated concentrations of these compounds detected in the soil appear to be limited in their areal extent to the immediate vicinity, including and surrounding the aboveground solvent storage area. The aboveground solvent-storage tank area appears to have been the primary onsite source area for the chemical compounds detected in the soil. This is based on the areal and vertical concentration distributions observed, previous investigations, and historic records of activities within the bermed solvent-storage area. Minor impacts to the soil were identified along the subsurface distribution lines connecting the northern railroad spur to the UST area. No significant impacts to vadose zone soils or groundwater were identified as resulting from activities associated with the storage, handling, or processing of corrosives, hydrogen peroxides, or glycols.

Two groundwater plumes exhibiting elevated concentrations of VOCs were identified during this investigation. An onsite plume, characterized by elevated concentrations of chlorinated hydrocarbons, including 1,1,1-TCA, PCE, TCE, 1,1-DCE, and DCM was detected. Maximum concentrations of the major compounds comprising the onsite plume were detected in groundwater samples collected immediately downgradient of the aboveground solvent-storage tank area. Elevated concentrations extend offsite both downgradient and upgradient of the McKesson site. A significant reduction of the concentration of compounds is observed in the lateral direction, perpendicular to the plume axis. Vertically, the elevated concentration of compounds appear to be restricted to the upper part of the aquifer. No

observations were made that would indicate elevated concentrations of dissolved organics or non-aqueous phase liquid solvents exist at depth within the aquifer.

An offsite plume, characterized by elevated concentrations of MEK, MIBK, and BTEX, in addition to concentrations of chlorinated hydrocarbons, was identified to the north (upgradient) and west (cross-gradient) of the McKesson site. This offsite plume extends downgradient from the Angeles site, which appears to be a possible source. Based on the compounds detected in the soil and groundwater at the Angeles site and the distribution of compounds detected in the groundwater upgradient of the McKesson site, the Angeles site appears to have also served as a contributing source to the onsite plume identified at the McKesson site.

#### **7.1.2 Fate and Transport**

The observed distribution of compounds in the vadose zone soils appears to result from two transport processes. Within and in the vicinity of the aboveground solvent-storage area, the observed distribution is most probably the result of vertical migration of liquid-phase solvents through the vadose zone accompanied with lateral spreading along zones of high permeability contrasts. Away from the solvent storage tank area and at depths of 40 to 45 feet bgs, the detected concentrations of volatile organics appear to be the result of vaporization of dissolved compounds present in the groundwater.

The observed plume configuration and aquifer test parameters indicate that the transport of chemical compounds in the groundwater is dominated by advection in a downgradient direction. Lateral to the plume axis, transport appears to be dependant primarily on diffusion. Diffusion also appears to control the distribution of compounds observed in the intermediate and deep zones of the aquifer.

#### **7.1.3 Risk Assessment**

The baseline risk assessment conducted by McLaren/ChemRisk indicates that concentrations of the selected chemicals of concern detected in the site soils do not pose a significant

noncancer risk nor do they pose a significant increased cancer risk to future onsite residential or occupational populations under current conditions. Risks to offsite populations were not quantitatively assessed.

Site-related health risks associated with the chemicals detected in groundwater were not possible to assess because the relative contributions of probable onsite and offsite sources have not been established. The relationship between health effects and groundwater exposure irrespective of onsite versus offsite contributions of chemicals of concern was used to set cleanup levels for groundwater and soil.

## 7.2 CONCLUSIONS

Activities and compounds associated with the aboveground solvent-storage tank area appear to have been the primary cause of the concentrations of compounds detected in onsite soils and groundwater. This is based on the areal and vertical concentration distributions observed, previous investigations, and historic records of activities within the bermed solvent-storage area.

Based on the compounds detected in the soil at the Angeles site and the distribution of compounds detected in the groundwater offsite cross-gradient to and upgradient of the McKesson site, the Angeles site appears to be the primary source of the secondary offsite plume and a contributing source to the onsite plume identified at the McKesson site.

### 7.2.1 Data Limitations

No borings were drilled within the UST area because of the high uncertainty associated with the locations of the tanks. Any unassessed impacts to vadose zone soils associated with the USTs would be limited to soils within this area. Impacts to groundwater as a result of the USTs have been assessed by the presence of groundwater monitoring wells located adjacent to and downgradient of the UST area.

Data collected as part of this investigation are sufficient to completely assess the extent of the groundwater plume identified onsite. However, offsite investigation of groundwater conditions is required to assess the downgradient, upgradient, and lateral extent of the plume. Assessment of soil and groundwater conditions upgradient of the McKesson site, including the Angeles site, is necessary to determine the magnitude of offsite contributions to the plumes identified both on and offsite.

#### **7.2.2 Recommendations for Future Work**

The following activities are recommended to complete the remedial investigation of the McKesson site:

- Upon removal of the USTs, collection and analysis of soil samples from beneath the tanks.
- Analyses of soil samples collected during the tank removal activities should be evaluated.
- A report presenting the results of the UST removals and incorporating data generated during this investigation should be prepared as an addendum to the RI Report.

These activities would complete the assessment of vadose zone soils onsite.

A workplan for the downgradient investigation of the groundwater plume detected onsite should be prepared. The scope of work associated with the offsite investigation should be designed to monitor and assess the downgradient and lateral extent of the onsite plume.

## REFERENCES

- California Department of Water Resources; 1961; Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A Ground Water Geology: Bulletin No. 104.
- Clayton Environmental Consultants; 1987; Remediation and Closure Plan, McKesson Corporation Property, 9005 Sorensen Avenue, Santa Fe Springs, California.
- Disposal Control Service, Inc.; 1987; Letter to Mr. Robert Ritchie dated February 16, 1987, regarding emptying of onsite storage tanks.
- Ecology and Environment, Inc.; 1985; Site Inspection Report, McKesson Chemical Company; Foremost-McKesson, Inc.; 9005 Sorensen Avenue, Santa Fe Springs, California.
- Environmental Protection Agency; 1988; Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA.
- Harding Lawson Associates; 1990a; RCRA Closure Report, McKesson Corporation Property, 9005 Sorensen Avenue, Santa Fe Springs, California.
- 1990b; Workplan (Rev. 3) Remedial Investigation and Feasibility Study, McKesson Corporation Property, 9005 Sorensen Avenue, Santa Fe Springs, California.
- J.H. Kleinfelder and Associates; 1986a; Environmental Assessment, Southern California Chemical Company, Inc., Santa Fe Springs, California.
- J.H. Kleinfelder and Associates; 1986b; Environmental Monitoring Study; Diversy Wyandotte Corporation; Santa Fe Springs, California.
- McKesson Chemical Company; 1983; Operation Plan (Part "B" Permit) for Hazardous Waste Storage.
- McKesson Corporation; 1984; Letter from Mr. Douglas L. Eisner to Ms. Megan Robinson (DHS) dated December 6, 1984, regarding soil sampling conducted in the corrosive storage area in October 1984.
- 1986; Letter from Mr. Gardner to Mr. Kenneth Hughes (DHS) dated May 16, 1986, presenting results of MES March 1986 investigation in the aboveground solvent storage area.
- McKesson Environmental Services; 1984a; Letter from Mr. Paul Marshall to Mr. Ivan Meyerson dated September 7, 1984, regarding analytical results from soil samples collected in June 1984.

**REFERENCES (continued)**

--- 1984b; Letter from Mr. Paul Marshall to Mr. Ivan Meyerson dated July 30, 1984, regarding analytical results from soil samples collected in June 1984.

--- 1986; Environmental Information Survey; McKesson Chemical Facility; 9005 Sorensen Avenue, Santa Fe Springs, California.

Moore and Taber; 1975; Foundation Investigation, McKesson Repackaging Facility, Santa Fe Springs, California.

Tetratex; 1989; Letter to Mr. Dennis Dickerson (DHS) dated April 11, 1989, regarding results of document review for McKesson Chemical Company site.

**DISTRIBUTION**

Harding Lawson Associates

2 copies:

McKesson Corporation  
One Post Street, 28th Floor  
San Francisco, California 94104

Attention: Ms. Jean Mescher

1 copy:

Latham & Watkins  
650 Town Center Drive, 20th Floor  
Costa Mesa, California 92626

Attention: Mr. Bruce Howard

3 copies:

Department of Toxic Substances Control  
1405 North San Fernando Boulevard, No. 300  
Burbank, California 91504


Attention: Mr. Douglas Suzuki

1 copy:

City of Santa Fe Springs  
11710 Telegraph Road  
Santa Fe Springs, California 90670-3658

Attention: Mr. Andrew C. Lazzaretto

**QUALITY CONTROL REVIEWER:**

  
Donald W. Quigley, P.E.  
Civil Engineer - 22026

TH/TAK/BS/DWQ/lf

MCK0020534

# **Attachment “I”**

## SUBLEASE

THIS SUBLEASE (this "Sublease") made as of this 19<sup>th</sup> day of June, 2003, by and between MCKESSON CORPORATION, a Delaware corporation ("Sublandlord"), successor-in-interest to Foremost-McKesson, Inc., a Maryland corporation, and ENVIRONMENTAL MATERIALS AND RECYCLING, LLC, a California limited liability company ("Subtenant").

### WITNESSETH:

**WHEREAS**, Sublandlord is the tenant under that certain Lease, dated as of December 15, 1975, between Harvey Sorkin, Seymour Moslin, Paul Maslin and Joseph Sorkin (collectively, "Landlord") and Sublandlord's predecessor-in-interest, as amended by First Amendment of Lease, dated as of April 30, 1976, and Second Amendment of Lease, dated as of May 10, 1978 (as amended, the "Master Lease");

**WHEREAS**, pursuant to the Master Lease Sublandlord leased certain premises (the "Master Lease Premises") located at 9005 Sorensen Avenue, Santa Fe Springs, California; and

**WHEREAS**, Subtenant desires to sublease from Sublandlord that portion (the "Premises") of the Master Lease Premises from Sublandlord as described on Exhibit "A" attached hereto and incorporated herein, which contains a concrete block industrial building (the "Building"); and Sublandlord has agreed to sublease the Premises to Subtenant on the terms, covenants and conditions set forth in this Sublease.

**NOW, THEREFORE**, in consideration of the mutual covenants contained in this Sublease, and for valuable consideration, the receipt and sufficiency of which are acknowledged by the parties, the parties agree as follows:

1. **SUBLEASE.** Sublandlord subleases to Subtenant and Subtenant subleases from Sublandlord the Premises, subject to the terms, covenants, and conditions contained in this Sublease.
2. **SUBLEASED PREMISES.** The Subleased Premises shall consist of the Premises.
3. **CONDITIONAL USE PERMIT.** Subtenant has obtained a conditional use permit (the "Conditional Use Permit") from the City of Santa Fe Springs to establish.

operate and maintain a concrete and asphalt crushing and recycling operation on the Premises. A copy of the Conditional Use Permit is attached hereto and incorporated herein as Exhibit "B". The Conditional Use Permit is valid until May 8, 2004, but may be renewed upon the request of Subtenant if the City of Santa Fe Springs determines that circumstances warrant a renewal.

4. **TERM.** The term (the "Term") of this Sublease shall commence on June 23, 2003 (the "Commencement Date") and shall expire on April 30, 2006; provided, however, that Subtenant shall have the right to terminate this Sublease effective as of May 8, 2004 or May 8, 2005 if the City of Santa Fe Springs disapproves renewal of the Conditional Use Permit. Subtenant agrees to act in good faith to request renewal of Conditional Use Permit upon its expiration.

5. **RENT.** No Base Rent shall be payable for the period commencing on the Commencement Date and ending on June 30, 2003. Effective as of July 1, 2003 Subtenant shall pay base rent ("Base Rent") in monthly installments of Seven Thousand Five Hundred Dollars (\$7,500.00) in advance without offset or deduction on the first day of each month during the Term of this Sublease.

Payments of Base Rent for any fractional calendar month shall be prorated. Rent shall be paid to Sublandlord at the following address: McKesson Information Solutions Inc., c/o McKesson Corporation, 21223 Network Place, Chicago, Illinois 60673-1212, unless and until Sublandlord shall designate in writing a different or further address to which rent shall be payable.

6. **ADDITIONAL RENT.** In addition to Base Rent as set forth in Section 5 above, Subtenant shall pay Sublandlord "Additional Rent", which term shall be defined to include the following:

- (a) Subtenant's Proportionate Share (as defined below) of "Excess Real Property Taxes" and "Excess Insurance Premiums";
- (b) any sum owed utilities, including separately metered utilities;
- (c) any Traffic Congestion and Street Maintenance Impact Fee which may be imposed by the City of Santa Fe Springs pursuant to Section 6 of the Conditional Use Permit;

- (d) any and all other fees, charges, costs and expenses payable pursuant to the terms and conditions of the Conditional Use Permit and in connection with the Conditional Use Permit except as provided in Section 11(b) below; and
- (e) any other sums owed by Subtenant pursuant to the terms of this Sublease or otherwise in connection with Subtenant's occupancy of the Premises.

For purposes of this Lease, Base Rent and Additional Rent shall hereafter be referred to as "Rent."

**7. BASE YEAR AND EXCESS REAL TAXES AND EXCESS INSURANCE PREMIUMS DEFINED.** "Base Year" shall mean calendar year 2003. "Excess Real Property Taxes" shall mean the excess, if any, of actual Real Property Taxes for any calendar year during the Term of this Sublease subsequent to the Base Year over the amount of actual Real Property Taxes for the Base Year. "Excess Insurance Premiums" shall mean the excess, if any, of actual insurance premiums and costs ("Insurance Premiums"), including but not limited to, the premiums and cost of fire and casualty coverage and rental abatement and earthquake insurance (if Landlord elects to provide such coverage) applicable to the Master Lease Premises for any calendar year during the Term of this Sublease subsequent to the Base Year over the amount of actual insurance premiums and costs for the Base Year.

"Real Property Taxes" shall mean all taxes, assessments, excises, levies, fees and charges (and any tax, assessment, excise, levy, fee or charge levied wholly or partly in lieu thereof or as a substitute therefor or as an addition thereto) of every kind and description, general or special, ordinary or extraordinary, foreseen or unforeseen, secured or unsecured, whether or not now customary or within the contemplation of Sublandlord and Subtenant, that are levied, assessed, charged, confirmed or imposed by any public or government authority on or against, or otherwise with respect to, the Premises or any part thereof or any personal property used in connection with the Premises. Real Property Taxes shall not include net income (measured by the income of Sublandlord from all sources or from sources other than solely rent), franchise, or capital stock taxes of Sublandlord. Real Property Taxes shall also include all taxes, assessments, excises, levies, fees and charges, including all payments related to the cost of providing facilities or services, whether or not now customary or within the contemplation of Sublandlord

and Subtenant, that are levied, assessed, charged, confirmed or imposed by any public or government authority upon, or measured by, or reasonably attributable to (a) the Premises, (b) the cost or value of any leasehold improvements made in or to the Premises by or for Subtenant, regardless of whether title to such improvements is vested in Subtenant or Sublandlord, (c) any rent payable under this Sublease, including any gross income tax or excise tax levied by any public or government authority with respect to the receipt of any such rent, (d) the possession, leasing, operation, management, maintenance, alteration, repair, use or occupancy by Subtenant of the Premises, or (e) this transaction or any document to which Subtenant is a party creating or transferring an interest or an estate in the Premises.

**8. PAYMENT OF EXCESS REAL PROPERTY TAXES AND EXCESS INSURANCE PREMIUMS.**

(a) Effective as of January, 2004 during each month of the Term, on the same date that Base Rent is due, Subtenant shall pay to Sublandlord an amount equal to 1/12 of the annual cost, as estimated by Sublandlord from time to time, of Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums.

Subtenant's Proportionate Share is 80%.

(b) Within 90 days after the end of each calendar year (effective as of 2004) during the Term Sublandlord shall furnish to Subtenant a statement of actual Real Property Taxes and actual Insurance Premiums and Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums for the previous calendar year (provided Sublandlord's right to collect Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums shall not be affected if Sublandlord fails deliver such statement within such 90 day period). A lump sum payment will be made by Subtenant within thirty (30) days of the delivery of that statement, equal to the excess, if any, of the actual amount of Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums over the amounts paid by Subtenant with respect to Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums for the preceding calendar year. If the amount of Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums is less than the estimated amount paid by Subtenant with respect to Subtenant's

Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums for such calendar year, Sublandlord shall apply the difference (the "Excess Overage") to the next ensuing installments of estimates of Subtenant's Proportionate Share of Excess Real Property Taxes or Excess Insurance Premiums until the entire Excess Overage amount is credited; provided, that if the Term of this Sublease has expired at the time Sublandlord's statement is delivered, Sublandlord shall refund the amount of any Excess Overage to Subtenant within thirty (30) days of issuance of Subtenant's statement. If actual Real Property Taxes for any year are less than Base Year Real Property Taxes or actual Insurance Premiums for any year are less than Base Year Insurance Premiums, then Subtenant shall not be entitled to any portion of the difference.

(c) In the event that Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums for the final calendar year of the Term are not finally calculated until after the expiration of the Term, then Subtenant's obligation to pay the same and Sublandlord's obligation to refund any Excess Overage shall survive expiration or termination of this Sublease. Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums for the calendar year in which the Term ends, shall be prorated on the basis of the number of days of the Term within such calendar year.

9. **UTILITIES.** (a) In addition to Base Rent and Subtenant's Proportionate Share of Excess Real Property Taxes and Excess Insurance Premiums, effective as of the Commencement Date Subtenant shall pay for all water, gas, electricity (as determined in the manner set forth in Section 9(b) below), heat, power, telephone, sewer, sprinkler services, refuse and trash collection, and other utilities and services used on the Premises, all maintenance charges for utilities, and any storm sewer charges or other similar charges for utilizes imposed by any governmental entity or utility provider, together with any taxes, penalties, surcharges or the like pertaining to Subtenant's use of the Premises. No interruption or failure of utilities shall result in the termination of this Sublease or abatement of rent. Subtenant agrees to limit use of water and sewer for normal restroom use. Sublandlord shall not in any way be liable or responsible to Subtenant for any loss, damage or expense which Subtenant may sustain or incur if, during the Term of this

Sublease, either the quantity or the character of the utilities servicing the Premises is changed or is no longer available or suitable for Subtenant's requirements.

(b) The cost of electricity used on the Premises shall be determined as follows. Sublandlord shall estimate the monthly cost of electricity ("Base Monthly Electrical Cost") consumed on the Master Lease Premises based upon the average of its electricity bills for the months of March and April, 2003. "Excess Electrical Costs" shall mean the excess, if any, of actual electrical costs for each month during the Term of this Sublease over the amount of the Base Monthly Electrical Cost. The Base Monthly Electrical Cost shall be adjusted based upon any increases or decreases in electrical rates. Subtenant shall pay any excess in the electricity costs ("Excess Electrical Costs") for the Master Lease Premises over the Base Monthly Electrical Cost (as the same may be adjusted from time to time).

During each month of the Term, on the same date that Base Rent is due, Subtenant shall pay to Sublandlord an amount equal to 1/12 of the annual cost, as estimated by Sublandlord from time to time, of Excess Electrical Costs.

Within 90 days after the end of each calendar year during the Term Sublandlord shall furnish to Subtenant a statement of actual Excess Electrical Costs for the previous calendar year (provided Sublandlord's right to collect Excess Electrical Costs shall not be affected if Sublandlord fails deliver such statement within such 90 day period). A lump sum payment will be made by Subtenant within thirty (30) days of the delivery of that statement, equal to the excess, if any, of the actual amount of Excess Electrical Costs over the amounts paid by Subtenant for Excess Electrical Costs for the preceding calendar year. If the amount of Excess Electrical Costs is less than the estimated amount paid by Subtenant for Excess Electrical Costs for such calendar year, Sublandlord shall apply the difference (the "Excess Overage") to the next ensuing installments of estimates of Excess Electrical Costs until the entire Excess Overage amount is credited; provided, that if the Term of this Sublease has expired at the time Sublandlord's statement is delivered, Sublandlord shall refund the amount of any Excess Overage to Subtenant within thirty (30) days of issuance of Subtenant's statement.

In the event that Excess Electrical Costs for the final calendar year of the Term are not finally calculated until after the expiration of the Term, then Subtenant's

obligation to pay the same and Sublandlord's obligation to refund any Excess Overage shall survive expiration or termination of this Sublease.

If at any time during the Term of this Sublease the Premises are separately metered, the procedure set forth above shall be discontinued, and Subtenant shall pay all electricity costs of the Premises directly to the utility providing electricity.

**10. INITIAL PAYMENT.** Concurrently with its execution and delivery of this Sublease, Subtenant shall pay Sublandlord the sum of Twenty Two Thousand Five Hundred Dollars (\$22,500.00) which is the sum of Base Rent for the month of June, 2003 plus the Security Deposit (as defined below).

**11. CONDITION OF PREMISES/SUBTENANT IMPROVEMENT WORK.**

(a) Except as otherwise provide herein with respect to the release of certain Hazardous Materials (as defined below) on the Premises, Subtenant acknowledges that Sublandlord has made no representations as to the condition of the Premises and that Subtenant has inspected the Premises and is fully familiar with the physical condition thereof. Except as provided in Subsection 11(b) below Sublandlord shall have no obligation to construct any improvements in the Premises, and Subtenant shall accept the Premises in "as is" condition without any obligation of Sublandlord to repaint, remodel, repair, improve or alter the Premises or to provide Subtenant any allowance therefor. Sublandlord has made no representation or warranty regarding the adequacy of the existing electrical service to the Premises for Subtenant's contemplated use, and Subtenant has confirmed the such services is adequate for its contemplated use of the Premises.

(b) Prior to the Commencement Date Sublandlord, at its expense, shall perform the work and construct the improvements (the "Subtenant Improvement Work") in the Premises as described in Exhibit "C" attached hereto and incorporated herein by this reference. Sublandlord shall perform the Subtenant Improvement Work in compliance with all applicable laws, ordinances codes and regulations. Sublandlord's obligation to do the Subtenant Improvement Work is contingent upon Subtenant first obtaining the consent of Landlord for the Subtenant Improvement Work pursuant to Section 8 of the Master Lease.

Sublandlord shall apply for any building permits which may be required in connection with the Subtenant Improvement Work. Sublandlord shall have no obligation to apply for or obtain any zoning amendments, variances or use permits.

Sublandlord shall be deemed to have "substantially completed" the Subtenant Improvement Work for purposes hereof if Sublandlord has caused all of the Subtenant Improvement Work to be substantially completed, except for so-called "punchlist items," e.g. minor details of construction or decoration or mechanical adjustments which do not substantially interfere with Subtenant's occupancy of the Premises.

Sublandlord shall use reasonable efforts to cause its contractors performing the Subtenant Improvement Work to use reasonable and diligent efforts not to interfere with ongoing operations conducted by Subtenant at the Premises.

(c) Sublandlord consents to removal by Subtenant of existing curbing and yard lights and to the addition of clean fill which is structurally compacted to at least 95% of the maximum dry density as determined by ASTM D-1557 in the truck well, provided that such removal and addition comply with the landscaping and parking plan prepared pursuant to Section 11 of the Conditional Use Permit.

(d) Subtenant acknowledges that the Building must remain open on one side as it currently exists, and Subtenant shall not enclose the open side of the Building.

**12. USE.** Subtenant may use the Premises for a concrete and asphalt crushing and recycling operation only. Subtenant shall comply with all of the terms and conditions of the Conditional Use Permit. Subtenant's failure to comply with all of the terms and conditions of the Conditional Use Permit shall be a default hereunder. Subtenant warrants that it has obtained all other required permits, licenses and other governmental agency approvals to conduct its business on the Premises. Subtenant use of the Premises shall not be conducted in a manner so as to cause a public or private nuisance.

**13. SIGNAGE.** Subtenant shall have the right to install signage on the main fascia of the Building subject to approval (if necessary) by Landlord, approval by Sublandlord and compliance with all applicable ordinances, codes and regulations of the City of Santa Fe Springs. Upon expiration or earlier termination of the Sublease Subtenant shall remove all signage at its expense and repair any damage caused by such removal. Subtenant shall

pay all costs relating to the design, fabrication, installation, permitting and removal of such signage.

**14. MASTER LEASE.** This Sublease is subject to all the terms, covenants and conditions of the Master Lease, which is attached hereto and incorporated herein as Exhibit "D".

All applicable terms and conditions of the Master Lease are incorporated into and made a part of this Sublease as if Sublandlord were the landlord thereunder and Subtenant were the tenant thereunder. Subtenant covenants and agrees with Sublandlord to do and perform the covenants and agreements required of Sublandlord in the Master Lease except as modified by the terms and conditions of this Sublease as fully as if it were named the tenant therein.

(a) Notwithstanding the foregoing, the following provisions of the Master Lease will not apply to the Sublease if set forth below, or will apply as modified by the parentheticals following the paragraph reference: Sections 2 (the term Premises shall mean the Premises (as defined herein), 4, 5, 6, 7, 14, 17, 24, 26, 27, 28, 29, 32 and 35, the First Amendment and the Second Amendment.

(b) Subtenant shall not commit or suffer any act or omission that will violate any of the provisions of the Master Lease.

(c) Subtenant shall undertake and perform each and every covenant, undertaking, obligation or action required (except for payment of Base Rent which shall be in accordance with the terms stated in this Sublease and those deleted sections of the Master Lease referenced in Section 14(a) above) of Sublandlord under the terms of the Master Lease. In such regard, Subtenant agrees to assume as to the Premises all maintenance and repair obligations of Sublandlord under the Master Lease. Subtenant agrees to do nothing inconsistent with Sublandlord's obligations under the Master Lease. It is further agreed that if Subtenant is in default of provisions of the Master Lease, Sublandlord shall have all the rights of Landlord under the Master Lease, including the right to terminate this Sublease, and may, but need not, cure said default specifically on behalf of the Subtenant, in which case, all reasonable costs, damages and expenses incurred

by Sublandlord in connection therewith shall be paid to Sublandlord by Subtenant immediately upon demand as Additional Rent hereunder.

(d) Notwithstanding anything herein contained, the only services or rights to which Subtenant is entitled hereunder are those to which Sublandlord is entitled under the Master Lease; and for all such services and rights Subtenant will look to the Landlord under the Master Lease. Subtenant recognizes that Sublandlord is not in a position to render any of the services or to perform any of the obligations required of Landlord by the terms of the Master Lease. Therefore, despite anything to the contrary in this Sublease, Subtenant agrees that performance by Sublandlord of its obligations under this Sublease is conditioned on performance by the Landlord of its corresponding obligations under the Master Lease, and Sublandlord will not be liable to Subtenant for any default of Landlord under the Master Lease. If Landlord fails to perform its obligations under the Master Lease, Sublandlord agrees to use commercially reasonable efforts to obtain that performance on behalf of Subtenant. Such commercially reasonable efforts shall include efforts to contact (in person, by telephone and/or in writing) and negotiate with Landlord, but shall not include instituting litigation or any other proceedings.

(e) Provided that there exists no default by Sublandlord under the Master Lease, Subtenant will not have any claim against Sublandlord based on the Master Landlord's failure or refusal to comply with any of the provisions of the Master Lease unless that failure or refusal is a result of Sublandlord's act or failure to act. Despite the Master Landlord's failure or refusal to comply with any of those provisions of the Master Lease, this Sublease will remain in full force and effect and Subtenant will pay the Base Rent and Additional Rent and all other charges provided for in this Sublease without any abatement, deduction or setoff, unless Master Landlord's failure or refusal to comply is due to Sublandlord's breach of its obligation to pay rent under the Master Lease.

Subtenant acknowledges that Sublandlord has advised it that Landlord has a pending lawsuit against Sublandlord for breach of the Master Lease arising out of vandalism which has occurred in the past and environmental contamination of the Master Lease Premises. Subtenant waives any claims against Sublandlord

which it might otherwise have arising out of termination of the Master Lease as a result of any breach of the Master Lease alleged in said lawsuit.

(f) By entering into this Sublease, Sublandlord and Subtenant agree that if Subtenant breaches an obligation under this Sublease which would also constitute a default by Sublandlord under the Master Lease if not cured within the applicable grace period, then Landlord shall have all rights and remedies against Subtenant that it also has against Sublandlord for such a default. Subtenant shall have no rights or claims against Landlord and shall not have the right to enforce against Landlord any of Sublandlord's rights and remedies under the Lease.

**15. MAINTENANCE AND REPAIR.** Subtenant, at Subtenant's sole cost and expense, shall maintain and repair the Premises, including, without limitation all grounds, landscaping (which shall include maintenance of all landscaping installed by Sublandlord as part of the Subtenant Improvement Work pursuant to Section 11 of the Conditional Use Permit) and parking areas.

**16. SECURITY DEPOSIT.** Simultaneously with the execution and delivery of this Sublease, Subtenant shall deposit with Sublandlord the amount of Fifteen Thousand Dollars (\$15,000.00) in cash (the "Security Deposit") as security for performance by Subtenant of the covenants and obligations hereunder. The Security Deposit shall be held by Sublandlord without interest; no trust relationship shall be deemed created thereby; and the Security Deposit may be commingled with other assets of Sublandlord. If Subtenant defaults in the performance of any of its covenants hereunder, Sublandlord may, upon notice to Subtenant, apply the whole or any part of the Security Deposit, to the extent required for the payment of Base Rent, Additional Rent or other sums due from Subtenant hereunder, in addition to any other remedies available to Sublandlord. In the event Sublandlord shall so apply the Security Deposit, Subtenant shall, upon demand, immediately deposit with Sublandlord a sum equal to the amount so applied. Subtenant's failure to do so shall constitute a default under this Sublease. If Subtenant fully and faithfully complies with all the covenants hereunder, the Security Deposit (or the balance thereof) shall be returned to Subtenant within thirty (30) days after the last to occur of (i) the date the Term expires or terminates, (ii) surrender of possession of the Premises and

(iii) Sublandlord's inspection of the Premises and determination that all obligations of Subtenant under this Sublease have been fully satisfied.

**17. INSURANCE.** Subtenant shall obtain and keep in full force and effect during the Term, at its sole cost and expense, the following insurance coverage: (i) comprehensive general liability, including contractual liability (specifically covering this Sublease), cross liability, fire legal liability, and premises operations insurance, all on an "occurrence" policy form, with a minimum combined single limit in the amount Five Million Dollars (\$5,000,000.00) per occurrence for bodily or personal injury to, illness of, or death of persons and damage to property occurring in, on or about the Premises, (ii) worker's compensation insurance on its employees as required by statute, and (iii) rent interruption insurance in an amount equal to one year's Base Rent and Additional Rent under this Sublease for the benefit of Sublandlord. Such policy shall cover offsite nuisance claims arising out of the business conducted by Subtenant on the Premises. *Deductibles under any insurance required to be maintained by Subtenant hereunder shall in no event exceed \$2,500.* Sublandlord and Landlord shall be named an additional insured under any insurance maintained hereunder by Subtenant, except for worker's compensation insurance. Said insurance is to be written in a form reasonably satisfactory to Sublandlord by good and solvent insurance companies of recognized standing, admitted to do business in the State of California which companies shall be reasonably satisfactory to Sublandlord. Subtenant shall pay all premiums and charges for such insurance. Subtenant shall include in such policies a provision to the effect that same will not be canceled or modified except upon at least thirty (30) days' advance written notice to Sublandlord, Landlord and any other party entitled to notice under the Master Lease. Certificates of insurance (or upon the request of Sublandlord, a copy of the policy(ies)) shall be delivered to Sublandlord on or prior to the Commencement Date, together with any replacements or endorsements thereto. If Subtenant fails to obtain any insurance required hereunder, Sublandlord may obtain such insurance and the premium therefor shall be payable on demand as Additional Rent. Notwithstanding anything to the contrary contained in the Master Lease or this Sublease, Sublandlord shall have no liability with respect to Subtenant's property or any loss thereof or damage thereto arising from any cause whatsoever, and Subtenant shall obtain adequate insurance against same.

**18. ASSIGNMENT OR SUBLETTING.**

Subtenant shall not assign this Sublease or further sublet the Premises (or any portion thereof) without the prior written consent of Sublandlord, which consent may be withheld in Sublandlord's sole and absolute discretion.

Notwithstanding any further sublease of the Premises (or any part thereof) by Subtenant or assignment of this Sublease, Subtenant shall at all times remain liable for the payment of Base Rent, Additional Rent and any other charges payable by Subtenant pursuant to this Sublease and for compliance with all of Subtenant's other obligations under this Sublease.

For purposes of this Sublease, any change or transfer of more than fifty percent (50%) of the voting stock or membership interests of Subtenant or transfer of substantially all of the assets of Subtenant shall be considered an assignment requiring Sublandlord's prior written consent.

**19. EXPIRATION.** This Sublease shall automatically terminate upon any termination or expiration of the Master Lease in accordance with the terms thereof prior to the expiration date of this Sublease, or any renewal thereof.

**20. DAMAGE TO PROPERTY; INJURY TO PERSONS.** All personal property of any kind or description shall be on the Premises at Subtenant's sole risk. Sublandlord shall not be liable for any injury or damage which may be sustained to person or property by Subtenant or any other person caused by or resulting from steam, electricity, gas, water, rain, ice or snow, or any leak or flow from or into any part of the Premises, or from the breakage, leakage, obstruction or other defect of the pipes, wiring, appliances, plumbing or lighting fixtures, or from the condition of the Premises, or from any source or cause whatsoever, except to the extent said damage or injury shall be caused by or be due to the gross negligence or willful misconduct of Sublandlord, its agents, servants, contractors or employees, nor shall Sublandlord be liable for any defect in the Premises, latent or otherwise.

**21. INSURANCE AND CONDEMNATION PROCEEDS.** Despite anything contained in the Master Lease to the contrary, as between Sublandlord and Subtenant only, in the event of damage to or condemnation of the Premises, all insurance proceeds or condemnation awards received by Sublandlord pursuant to the Master Lease (except

for Subtenant's personal property) will be deemed to be the property of Sublandlord, and Sublandlord will have no obligation to rebuild or restore the Premises.

**22. LATE CHARGES.** Subtenant hereby acknowledges that the late payment by Subtenant to Sublandlord of Base Rent, Additional Rent and other sums due hereunder will cause Sublandlord to incur costs not contemplated by this Sublease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed upon Sublandlord by the terms of the Master Lease. Accordingly, if any installment of Base Rent, Additional Rent or other sum due from Subtenant shall not be received by Sublandlord or Sublandlord's designee within ten (10) days after the date on which such amount was due, then, without any requirement for notice to Subtenant, Subtenant shall pay to Sublandlord a late charge equal to five percent (5%) of such overdue amount. The parties hereby agree that such late charge represents a fair and reasonable estimate of the costs Sublandlord will incur by reason of late payment by Subtenant. Acceptance of such late charge by Sublandlord shall in no event constitute a waiver of Subtenant's default or breach with respect to such overdue amount, nor prevent Sublandlord from exercising any of the other rights and remedies granted hereunder.

**23. INSPECTION.** Sublandlord shall have the right but shall not be obligated to enter upon the Premises upon notice to Subtenant at all reasonable hours for the purpose of examining the same or, at Subtenant's expense, for making any repairs, alterations or additions which Sublandlord shall deem necessary or advisable for the safety or preservation of the Premises if Subtenant fails to do so within a reasonable time after written notice from Sublandlord. Sublandlord shall have the right to enter upon the Premises at any time in the case of an emergency.

**24. INDEMNIFICATION.** Subtenant shall defend, indemnify and save harmless Sublandlord and its agents and employees against and from all liabilities, obligations, damages, penalties, suits, actions, demands, fines, losses, claims, costs, charges and expenses, including, without limitation, reasonable attorneys' fees and disbursements, which may be imposed upon or incurred by or asserted against Sublandlord and/or its agents by reason of (i) any work or thing done in, on or about the Premises by Subtenant, its agents, contractors, subcontractors, employees, licensees or invitees; (ii) any accident

or bodily injury, death or damage to property occurring in, on or about the Premises during Subtenant's occupancy of the Premises, or any accident, bodily injury, death or damage to property occurring outside the Premises, where such accident, injury or damage results, or is claimed to have resulted from an act or omission on the part of Subtenant or Subtenant's employees, licensees, invitees or contractors; (iii) any failure on the part of Subtenant to perform or comply with any of the covenants, agreements, terms, provisions, conditions or limitations contained in this Sublease on its part to be performed or complied with; (iv) any failure of, or delay by, Subtenant in surrendering the Premises in accordance with the provisions of this Sublease, including, without limitation, any claims made by Landlord or any succeeding tenant, arising out of, or in connection with, such failure or delay; or (v) any act or omission of Subtenant, its agents, officers, directors, contractors, employees, invitees or licensees, or conduct of Subtenant's business in, or use, occupancy and management of, the Premises. The provisions of this Section 24 shall survive the expiration or earlier termination of the term of this Sublease.

Subtenant agrees to protect, defend, indemnify, and hold Sublandlord harmless from and against any and all liabilities, claims, expenses, losses and damages (including reasonable attorneys' fees and costs), that may at any time be asserted against Sublandlord by Landlord for the failure of Subtenant to perform any of the covenants, agreements, terms, provisions, or conditions contained in this Sublease or the Master Lease that Subtenant is obligated to perform.

**25. HAZARDOUS MATERIALS.** Subtenant shall not permit or conduct the handling, use, generation, treatment, storage or disposal on, in or about the Premises of any Hazardous Materials in excess of permitted levels or reportable quantities under applicable Hazardous Materials Laws without Sublandlord's prior written consent, which may be withheld in Sublandlord's sole discretion. Any such handling, use, generation, treatment, storage or disposal of any Hazardous Materials permitted by the terms of this Sublease shall be in compliance with all Hazardous Materials Laws. Subtenant shall secure and maintain in force all permits, licenses and approvals necessary for its operations and shall remain in compliance with such permits.

Subtenant acknowledges that the asphalt and certain related materials which will be recycled by Subtenant on the Premises contain Hazardous Materials that are normally

constituents in newly-manufactured asphalt. Subtenant does not consent to the importation onto the Premises of asphalt or concrete contaminated with Hazardous Materials that are not typically constituents of newly-manufactured asphalt or concrete. Subtenant agrees to handle, use, treat, store and dispose of any asphalt and related materials in strict compliance with all Hazardous Materials Laws.

Subtenant shall, within five (5) days after Subtenant's receipt thereof, give written notice to Sublandlord of any notice or other communication (oral or written) regarding any (a) actual or alleged violation of Hazardous Materials Laws by Subtenant or with respect to the Premises, (b) actual or threatened migration of Hazardous Materials from the Premises, or (c) the existence of Hazardous Materials in or on the Premises in violation of this Section 25 or regarding any actual or threatened investigation, inquiry, lawsuit, claim, citation, directive, summons, proceeding, complaint, notice, order, writ or injunction relating to any of the foregoing.

Subtenant shall indemnify and defend Sublandlord against and hold Sublandlord harmless from all claims, demands, liabilities, damages, fines, encumbrances, liens, losses, costs and expenses, including reasonable attorneys' fees and disbursements, and costs and expenses of investigation, arising from or related to the existence on or after the Commencement Date of Hazardous Materials brought in or on the Premises by Subtenant or the actual or threatened migration on or after the Commencement Date of Hazardous Materials from the Premises as a result of contamination caused by Subtenant or the existence from and after the Commencement Date of a violation of Hazardous Materials Laws by Subtenant with respect to the Premises. This duty of indemnification and defense shall include, but not be limited, to damages, costs, liabilities, losses and expenses, including reasonable professional consultant's, engineering or attorneys' fees, incurred in response to claims based upon violations of federal, state or local environmental laws, strict liability or negligence. To the extent Subtenant has an indemnification obligation under this Section 25, Subtenant shall, to the reasonable satisfaction of Sublandlord, perform all remedial actions necessary to remove any Hazardous Materials in or on the Premises on or after the Commencement Date or to remedy actual or threatened migration from the Premises of any Hazardous Materials or to remedy any actual or threatened violation of Hazardous Materials Laws. This Section 25 shall survive termination of this Sublease.

As used herein, "Hazardous Materials" means oil and other petroleum products, flammable explosives, asbestos, urea formaldehyde insulation, radioactive materials, hazardous wastes, toxic or contaminated substances or similar materials, including, without limitation, any substances which are "hazardous substances," "hazardous wastes," "hazardous materials," or "toxic substances" under any past, present or future state or federal law, ordinance or regulation.

As used herein, the term "Hazardous Materials Laws" means all laws, ordinances, rules, regulations, orders and other requirements of any government or public authority now in force or which may hereafter be in force relating to the protection of human health or the environment from Hazardous Materials, including all requirements pertaining to reporting, licensing, permitting, investigation and remediation of emissions, discharges, storage, disposal or releases of Hazardous Materials and all requirements pertaining to the protection of the health and safety of employees or the public with respect to Hazardous Materials.

Sublandlord, or its representative, shall have the right to inspect the Premises at all times during the term of this Sublease with respect to Subtenant's compliance with Hazardous Materials Laws. If the Subtenant breaches any of its obligations under this paragraph, then Subtenant shall be in default hereunder.

## **26. EXISTING CONTAMINATION AND REMEDIATION.**

(a) Pursuant to an order issued by the State of California, Sublandlord is currently conducting soils and groundwater investigations, ongoing monitoring efforts and a remediation program (the "Remediation Program") in regard to certain Contamination (as defined below) located on or under the Premises and shall continue to conduct the Remediation Program until such time as the applicable governmental agencies determine that Sublandlord is no longer required to do so. As used herein, "Contamination" means the presence of or release of Hazardous Materials into any environmental media from, upon, within, below, into or on any portion of the Master Lease Premises so as to require remediation, cleanup or investigation under any applicable Hazardous Materials Laws.

Subtenant acknowledges receipt of a copy of a risk assessment performed with respect to the Master Lease Premises and a copy of the most recent quarterly groundwater monitoring report.

Subtenant hereby agrees that Sublandlord shall have free and unfettered access to enter upon the Premises at any time during the Term of the Sublease for the purpose of constructing, installing, maintaining, repairing, removing, replacing, operating or using certain monitoring and extraction wells, pumps, pipes, pipe lines and water purification apparatus and all necessary braces, connections, fastenings and other appliances and fixtures for use in connection therewith or appurtenant thereto (the "Remediation Facilities") in connection with the Remediation Program and for taking samples from wells. Subtenant shall provide Sublandlord with keys to any gates to the Premises for such purpose. In entering upon the Premises for such purpose Sublandlord shall use reasonable efforts to not to interfere with ongoing operations conducted by Subtenant at the Premises. Subtenant shall not enter or cause any materials to be placed upon any area (other than the Premises) of the Master Lease Premises where the Remediation Program is being conducted. Subtenant acknowledges that the State of California may require installation of additional monitoring and/or vapor extraction wells on the Premises during the Term of this Sublease, hereby consents to such installation and agrees to be bound the provisions of this Sublease with respect to such additional wells.

(b) In connection with the Remediation Program, Sublandlord has installed a number of monitoring wells and a vapor extraction well (the "Monitoring and Vapor Extraction Wells") on the Premises. Sublandlord agrees that Subtenant may cover the Monitoring and Vapor Extraction Wells with materials which it is recycling on the Premises provided that (i) upon twenty-four (24) hours notice from Sublandlord, Subtenant shall clear all materials covering the Monitoring and Vapor Extraction Wells so that Sublandlord (and any applicable governmental authority) shall have unimpeded access to the Monitoring and Vapor Extraction Wells for inspection, testing or repairs, and (ii) Subtenant shall indemnify and save harmless Sublandlord against and from all liabilities, obligations, damages, penalties, suits, actions, demands, fines, losses, claims, costs, charges and expenses, including, without limitation, reasonable attorneys' fees and disbursements, arising out of any damage to the Monitoring and Vapor Extraction Wells or any other Remediation Facilities caused by Subtenant or its employees, agents, contractors or invitees. Subtenant shall reimburse Sublandlord for the cost of repair of any Monitoring or Vapor Extraction Wells damaged by Subtenant within twenty (20)

days of receipt of an invoice for repair costs from Sublandlord. Subtenant shall within twenty-four (24) hours after the occurrence of any damage to any of the Monitoring and Vapor Extraction Wells give written notice thereof to Sublandlord. The provisions of this subsection shall survive the expiration or earlier termination of the term of this Sublease.

(c) Sublandlord shall have access 24 hours per day, 7 days a week to the Treatment Area (as designated on Exhibit "A") and in connection with such access shall have vehicular access and the right to park vehicles near the entrance to the Treatment Area which is located on the south side of the building containing the Treatment Area within the open bay area. The open bay area (the area of the building between the Treatment Area and the office (as shown on Exhibit "A") shall be kept open at all times and not enclosed unless the means of enclosure allows air movement (e.g., a chain link fence).

(d) Except as arising out of Subtenant's performance of its obligations set forth in subsections (a)-(c) above, Sublandlord shall indemnify, defend and hold Subtenant and its employees harmless from and against any and all claims, losses, liabilities, damages, liens, causes of action, judgments, reasonable costs and expenses (including, without limitation, reasonable attorneys' fees) arising out of or relating to Sublandlord's entry onto the Premises for such purpose. The indemnification and defense obligation of Sublandlord set forth in the preceding sentence shall not cover or extend to any claims, liens, liabilities, actions, damages, losses, judgments, costs or expenses arising out of or related to the Contamination. Sublandlord's indemnification obligations with respect to the Contamination is set forth in the Subsection 26(c) below.

(e) Except as arising out of Subtenant's performance of its obligations set forth in subsections (a)-(c) above, Sublandlord hereby agrees to defend, indemnify and hold harmless Subtenant, its members, directors, officers, employees, agents, shareholders and their successors from and against any and all claims, demands, liabilities, damages, fines, actions, encumbrances, liens, costs and expenses, including reasonable attorneys' fees and disbursements, and the costs of investigation, cleanup and remediation arising from or related to (i) any government-ordered remediation or clean-up of Hazardous Materials which are on or under the Premises as of the Commencement Date; (ii) the actual or threatened migration prior to the Commencement Date of Hazardous Materials from the

Premises, and (iii) the existence prior to the Commencement Date of a violation of Hazardous Materials Laws by the Sublandlord with respect to the Premises. To the extent that Sublandlord has an indemnification obligation under this section, Sublandlord, at Sublandlord's cost, shall to the reasonable satisfaction of applicable governmental agencies, perform in accordance with all applicable laws, rules and regulations and after obtaining all requisite permits and licenses all remedial actions necessary to remove any Hazardous Materials on or under the Premises, to remedy actual or threatened migration from the Premises of any Hazardous Materials or to remedy any actual or threatened violation of Hazardous Materials Laws, provided any such remedial action is required under Hazardous Materials Laws. Notwithstanding the foregoing Sublandlord's indemnification obligation set forth in this section shall not be applicable to any and all claims, costs, demands, losses, damages, expenses, and liabilities, including without limitation attorneys' fees, court costs, expenses, and other costs of investigation and preparation paid or incurred in good faith in conjunction with the defense of defending against the same arising out of or attributable to personal or bodily injury to or the sickness, disease or death of any person or persons, including without limitation employees, agents or contractors of Subtenant. Furthermore, notwithstanding the foregoing, Sublandlord's indemnification as set forth in this section shall not extend to any potentially responsible party or the successors or assigns of any potentially responsible party.

Further, Sublandlord's indemnification obligation set forth above shall not be applicable to any and all claims, costs, demands, losses, damages, expenses, and liabilities, including without limitation attorneys' fees, court costs, expenses arising out of the pending lawsuit against Sublandlord for breach of the Master Lease arising out of vandalism and environmental contamination referred to in Section 14(e) above.

The aforesaid indemnification obligation shall survive until the last to occur of (a) the last date permitted by the law for the bringing of any claim or action with respect to which indemnification may be claimed by any of the indemnified parties against Sublandlord under this section, or (b) the date on which any claim or action for which indemnification may be claimed under this section is fully and finally resolved.

27. **STORM WATER.** Subtenant acknowledges that Sublandlord has informed it that storm water has pooled near the monitoring well designated as SB-4. Subtenant shall be responsible for management of any storm water which accumulates upon the Premises and shall take all necessary actions to comply with all applicable laws, ordinances, codes and regulations and orders of any governmental authority applicable to management of storm water on the Premises.

28. **PUBLICITY.** Sublandlord and Subtenant expressly agree that there shall be no press release or other publicity originated by the parties hereto or any representative thereof concerning the Sublease without the prior written consent of both parties.

29. **HOLDING OVER.** Any holding over by Subtenant at the expiration of the Term of this Sublease shall be treated as a tenancy at sufferance at two hundred percent (200%) of the Base Rent, Additional Rent and all other charges allocable to the Premises under the Master Lease and shall otherwise be on the terms and conditions set forth in this Sublease to the extent applicable.

30. **FINANCIAL STATEMENTS.** Upon Sublandlord's written request therefor, but not more often than two times per year, Subtenant shall promptly furnish to Sublandlord a financial statement, to the extent available to the public, for its most recent fiscal quarter or year, as applicable, prepared in accordance with generally accepted accounting principles and certified to be true and correct by Subtenant (on a quarterly basis) and Subtenant's accounting firm (on a yearly basis).

31. **GOVERNING LAW.** This Sublease shall be governed by and construed in accordance with the laws of the State of California.

32. **WAIVER.** Waiver by either party of any breach of any term, covenant or condition contained herein shall not be deemed a waiver of any such term, covenant or condition or any subsequent breach of the same or any other term, covenant or condition herein contained.

33. **NOTICES.** All notices given or required to be given hereunder shall be deemed given if in writing and hand delivered or sent by certified mail, postage prepaid, return receipt request or nationally-recognized overnight courier addressed to:

SUBLANDLORD:

McKesson Medical-Surgical Minnesota Supply Inc.  
c/o McKesson Medical-Surgical Inc.  
8741 Landmark Road  
Richmond, Virginia 23228  
Attention: Finance

with copies to:

McKesson Corporation  
One Post Street, 32<sup>nd</sup> Floor  
San Francisco, CA 94104  
Attention: McKesson Real Estate

and

Trammell Crow Company  
Attn.: McKesson Lease Administration  
1687 114th Street, S.E.  
Suite 250  
Bellevue, WA 98004

SUBTENANT:

Environmental Materials and Recycling, LLC,  
8195 E. Kaiser Blvd.  
Anaheim Hills, California 92808  
Attention: Michael A. Parker

as the case may be, unless and until such party shall designate a different or further address to which subsequent notices shall be sent. Such notice shall be deemed given upon receipt or upon refusal of delivery.

**34. SUCCESSORS AND ASSIGNS.** This agreement shall be binding upon and shall inure to the benefit of the parties hereto and their successors and permitted assigns.

**35. ENTIRE AGREEMENT.** This Sublease and the Master Lease constitute the entire understanding between the parties hereto with reference to the subletting of the Premises referred to herein and supersede all previous oral or written agreements between

the parties on such subject matter. This Sublease may be amended only by a written instrument signed by the other party, which instrument makes a specific reference to this Sublease.

**36. ATTORNEYS FEES.** If any legal action is taken to enforce the terms of this Sublease by Sublandlord or Subtenant, the prevailing party shall be entitled to recover reasonable attorneys fees and other costs and expenses incurred in connection with that legal action. "Prevailing party," as used herein, shall include, without limitation, a party who dismisses a lawsuit for such enforcement or interpretation in exchange for payment of the sum allegedly due, performance of covenants allegedly breached or consideration substantially equal to the relief sought in the lawsuit or other proceeding.

**37. CAPITALIZED TERMS.** All terms spelled with initial capital letters in this Sublease that are not expressly defined in this Sublease will have the respective meanings given such terms in the Master Lease.

**38. SURRENDER/RESTORATION.** Upon expiration or termination of this Sublease, Subtenant shall quit and surrender the Premises in the condition existing on the Commencement Date, ordinary wear and tear and damage caused by fire or other casualty excluded.


**39. BROKERS.** Sublandlord shall pay a commission to Trammell Crow Company, which represents Sublandlord and which shall pay CB Richard Ellis, Inc., which represents Subtenant, a procuring broker's commission pursuant to a separate agreement. Except as provided in the preceding sentence, each party to this Sublease represents and warrants to the other that the warranting party has incurred and will incur no obligation, by reason of this Sublease or the transaction contemplated hereby, for any real estate brokerage commission or finder's fee for which the other party would be liable. Each party shall, and hereby agrees to, defend, indemnify and hold the other party harmless from and against any and all claims, liabilities, damages and costs, without limitation, reasonable attorneys fees and costs, arising out of a breach of that party's representations and warranties set forth in this section.

**IN WITNESS WHEREOF,** the parties hereto have caused this Sublease to be executed the day and year first above written.

SUBLANDLORD:

MCKESSON CORPORATION,

a Delaware corporation

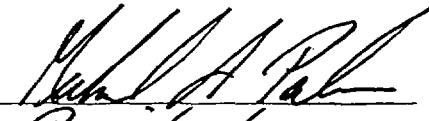
By: 

Its: ASSISTANT SECRETARY

SUBTENANT:

ENVIRONMENTAL MATERIALS AND RECYCLING, LLC,

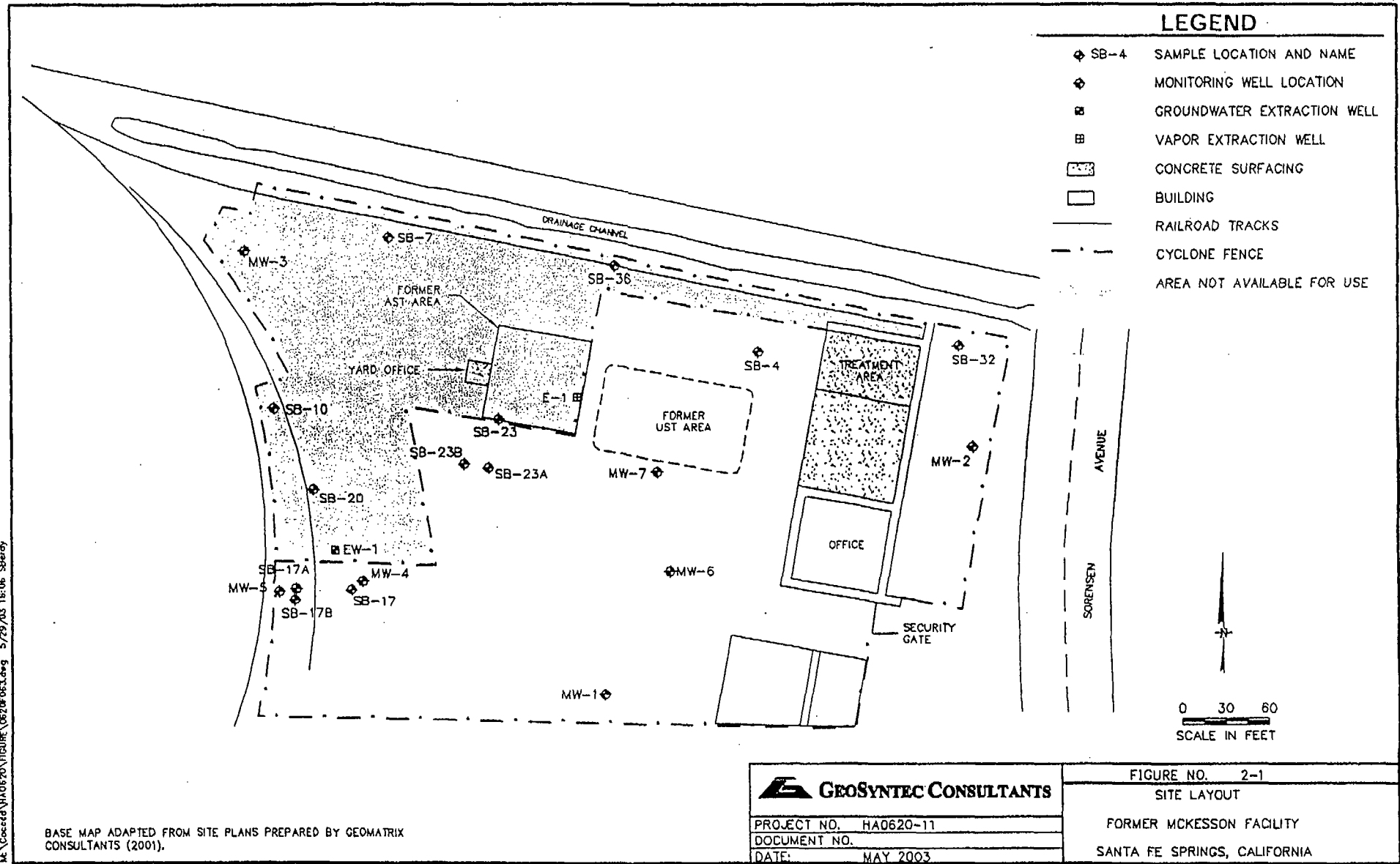
a California limited liability company

By: 

Its: President

**EXHIBIT A**  
**DESCRIPTION OF PREMISES**

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**EXHIBIT B**  
**CONDITIONAL USE PERMIT**



May 12, 2003

Re: Conditional Use Permit Case No. 617

Michael A. Parker  
Environmental Materials and Recycling  
8195 E. Kaiser Blvd.  
Anaheim Hills, CA 92808

Dear Mr. Parker:

The Planning Commission and Community Development Commission, at their respective meetings held April 28 and May 8, 2003, took action on your request for a Conditional Use Permit to establish, operate and maintain a concrete and asphalt crushing and recycling operation on an approximately 2.5 acre portion of the 4.1 acre property at 9005 Sorensen Avenue in the M-2, Heavy Manufacturing, Zone within the Consolidated Redevelopment Project Area.

The Planning Commission and Community Development Commission approved your request subject to the following conditions:

1. That the applicant shall implement a Spill Response Program consisting of street monitoring, sweeping and material clean-up of any dirt, aggregate, mud or debris material spilled upon or tracked onto any adjacent public street by vehicles visiting or dispatched from the subject operation.
2. That all aggregate material, both processed and unprocessed, shall only be stored within designated stockpile areas; the material height shall be limited to a maximum height of 35 feet above ground level.

CUP 617

Item No1

3. That all chainlink fences and gates visible from Sorensen Avenue shall be provided with redwood slats or a similar approved material for screening purposes; said screening material shall be subject to the prior approval of the Director of Planning and Development and completely installed prior to the initiation of the proposed use.
4. That the subject concrete and asphalt crushing and recycling operation shall be limited to normal workday hours of operation, between 8:00 a.m. and 5:00 p.m., Monday through Friday, as proposed by the applicant.
5. That, upon request by the City, the applicant shall provide outgoing weighmaster batch tickets and incoming raw material weight tickets requested for review by an authorized agent of the City. Applicant acknowledges that violation of the truck axle weight limits shall be sufficient grounds for revocation of this Permit.
6. That the City reserves the right to impose, at any time during the term of this Permit, a Traffic Congestion and Street Maintenance Impact Fee to help offset congestion or street damage costs related to or resulting from the subject operation. The Director of Public Works/Engineering shall determine when such fee shall be necessary and the amount of the offset fee.
7. That the applicant shall ensure that the Sales Tax Registration/Permit Number issued by the State Board of Equalization designates the City of Santa Fe Springs as the point-of-sale and includes the prefix designation "SR" in the 8-digit Permit Number (example "SR 12-345678"); the applicant shall submit to the City a copy of the Sales Tax Permit issued by the Board of Equalization reflecting the designations described above prior to the establishment of operations on the subject site.
8. That the applicant shall implement a watering/fugitive dust suppression program to prevent dust from being generated by the subject use; said watering system shall provide dust suppression for processed and unprocessed material stockpiles, conveyor transfer points, crushing and screening operations and onsite vehicle circulation areas.
9. That the subject concrete and asphalt crushing and recycling operation shall be operated in strict compliance with the Performance Standards of the City Zoning Regulations (Sections 155.415 through 155.433), particularly in regard to controlling dust and noise.
10. That any signage and similar improvements for the proposed use shall be subject to the approval of the Director of Planning and Development.

11. That the applicant shall submit for approval by the Director of Planning and Development a detailed landscape and automatic sprinkler system plan for the onsite and parkway landscape areas designed pursuant to the Landscape Guidelines of the City. Said plan shall show the expansion of the landscape area through the reduction of the existing parking area to provide a maximum of ten parking spaces in front of the existing office building. Said revised landscape and parking improvements shall be completed to the satisfaction of the Director of Planning and Development within sixty (60) days of the effective date of this approval, by July 8, 2003.
12. That the applicant shall submit for approval by the City Engineer a site grading and drainage plan indicating how runoff will be contained.
13. That the final plot plan for the proposed use and all other appurtenant improvements shall be subject to the approval of the Director of Planning and Development.
14. That all other requirements of the City Zoning Ordinance, Building Code, Property Maintenance Ordinance, Fire Code and all other applicable regulations shall be complied with.
15. That Conditional Use Permit Case No. 617 shall be valid for a period of one (1) year, until May 8, 2004, at which time the applicant may request by letter that the City review the circumstances of this case to determine if circumstances warrant an extension of the privileges granted herein.
16. That this Permit shall not be valid for any purpose until the applicant has filed with the City of Santa Fe Springs an affidavit stating that he is aware of and accepts all conditions of the Permit.
17. It is hereby declared to be the intent that if any provision of this Permit is violated or held to be invalid, or if any law, statute or ordinance is violated, the Permit shall be void and the privileges granted hereunder shall lapse.

Your attention is called to the fact that this approval is not effective until an affidavit has been signed and notarized to indicate your willingness to accept and abide by the conditions of approval. **Two copies of an affidavit are enclosed for this purpose. One copy should be returned to this office upon completion; the other copy is for your files.**

The Zoning Ordinance sets forth an appeal period of fourteen days, beginning with the date you receive this letter, during which any party aggrieved by the Commission's action can appeal the matter to the City Council. You are hereby notified that the time within which judicial review must be sought is governed by the provisions of California Code of Civil Procedure, Section 1094.6.

If you have any questions regarding this matter, please feel free to call Paul Ashworth, Director of Housing and Community Preservation, at (562) 868-0511, ext. 7353.

Sincerely,

Robert G. Orpin  
Director of Planning and Development

cc: Frederick W. Latham, City Manager  
Donald K. Jensen, Director of Public Works  
Tom Lopez, Assistant Director of Public Works  
Tony Olmos, Principal Civil Engineer  
Neal Welland, Fire Chief  
Bil Murphy, Fire Marshall  
Dave Klunk, Director of Environmental Protection

**EXHIBIT C**  
**SUBTENANT IMPROVEMENT WORK**

1. Lower existing electrical room to grade level. Construct a wall separating the restroom area from the warehouse. Construct a men's and a women's restroom. Sublandlord and Subtenant will work together to approve a suitable site layout.
2. Remove and replace existing driveway approach. Remove and replace asphalt area between the approach and the gate.
3. Reduce the fenced in front parking area to a depth of 43 feet. Remove perimeter fencing. Slurry coat, seal and stripe the remaining parking area.
4. Install screening to the existing fence that is visible from Sorensen Avenue.
5. Install landscaping (including expansion of landscape area) and automatic sprinkler for the onsite and parkway landscape areas pursuant to a plan approved by the City of Santa Fe Springs pursuant to Section 11 of the Conditional Use Permit.
6. Relocation of existing gate to northeast corner of building.

**EXHIBIT D**  
**MASTER LEASE**

LEASE

1. PARTIES. Agreement made as of the 15th day of December, 1975, between HARVEY SORKIN, an individual; SEYMOUR MOSLIN, an individual; PAUL MASLIN, an individual; and JOSEPH SORKIN, an individual, hereinafter called Lessor, and FOREMOST-MCKESSON, INC., a Maryland corporation, hereinafter called Lessee.

2. PREMISES.

A. In consideration of the rent reserved and of the covenants to be performed by Lessee, Lessor hereby leases to Lessee, and Lessee hereby hires from Lessor, the premises situated in the City of Santa Fe Springs, County of Los Angeles, State of California, shown on Exhibit A and described in Exhibit B, attached to and made a part hereof, hereinafter referred to as "the premises."

B. The parties hereby approve the plans and specifications for the improvements to be constructed upon the premises, which plans and specifications are described in Exhibit C, attached to and made a part hereof. The parties acknowledge that, in accordance with a separate agreement between it and Lessor, Crocker Land Company has undertaken to construct the improvements in substantial conformance with the plans and specifications. Upon such completion, Lessee shall provide Lessor with: (i) certification that the construction has been completed to Lessee's satisfaction in substantial conformance with the plans and specifications; and (ii) notification of unconditional acceptance of the premises by Lessee for occupancy.

3. TERM. The term of this Lease shall commence as of the date of substantial completion of the premises and shall expire thirty (30) years from such date, unless sooner terminated under the terms and conditions hereof.

4. RENT.

A. Lessee shall pay to Lessor, at the address shown in Article 35 of this Lease, as rent, in lawful money of the United States of America, the sum of SIX THOUSAND THIRTY-SEVEN and 50/100 DOLLARS (\$6,037.50) per month, in advance, on the first day of each calendar month, commencing upon substantial completion of the premises and continuing for the term of this Lease; provided that if the date of commencement is not the first day of the calendar month, the rent for such month and for the calendar month in which the Lease ends shall be equitably prorated.

B. The rental specified herein is based on the estimated cost of the improvements to be made, as above provided. The parties agree that the monthly rental payable by Lessee shall be adjusted to reflect any increase or decrease in such costs in an amount equal to the sum of such difference multiplied by 0.007916. Upon determination thereof, Lessor and Lessee agree to execute a lease amendment setting forth the actual rental commencement date and the adjusted monthly rental payments.

C. This Lease shall be deemed and construed to be an absolutely net lease, and Lessor shall receive, except as otherwise expressly provided, such rental installments and additional rent and other amounts payable to Lessor hereunder free from any costs, charges, taxes, assessments, fees, impositions, expenses or deductions of any and every kind or nature whatsoever (except income, transfer and inheritance taxes).

5. HOLDING OVER. Any holding over after the expiration of said term, with the consent of Lessor, shall be construed to be a tenancy from month to month, at the rental then in effect, and shall otherwise be on the terms and conditions herein specified, so far as applicable (excluding, however, the options to renew in Article 6).

6. OPTION TO RENEW. Lessee shall have two successive options to renew this Lease upon the same terms and conditions (except as to rent), each for an additional period of five (5) years, and may exercise the same by giving Lessor written notice thereof at least 90 days prior to the expiration of the then

term of this Lease. The rental during each renewal period shall be the fair rental value of the premises as of the commencement of such period, determined by agreement between Lessor and Lessee or, in the absence of such agreement, determined by arbitration as provided in Article 17. If Lessee, at its own expense, expands or extends the improvements in accordance with Article 28 hereof, the value of such expansion or extension shall not be used in determining such fair rental value. In no event shall the rental for either option period be less than the rent herein provided.

7. PURPOSES. Lessee may use the premises for any lawful purpose.

8. WASTE; ALTERATIONS. Lessee shall not commit, or suffer to be committed, any waste upon the premises or any nuisance thereon. Lessee shall not make or suffer to be made any alterations in, additions to or expansions of the building which cost in excess of \$10,000 with regard to any one alteration, addition or expansion without the prior written consent of Lessor, which consent shall not be unreasonably withheld.

9. FREE FROM LIENS. Lessee shall keep the premises free from any liens arising out of any work performed, materials furnished or obligations incurred by Lessee. If any work is to be performed by Lessee for an amount in excess of \$10,000, Lessee shall give Lessor at least ten (10) days prior written notice to permit Lessor to post a Notice of Non-Responsibility at the premises.

10. CONFORMITY WITH GOVERNMENT REGULATIONS. Lessee shall, at Lessee's sole cost and expense, comply with all laws, ordinances and regulations of municipal, state and federal authorities now or hereafter in force, pertaining to the premises and the use thereof; provided that if during the last three (3) years of the Lease (or of any renewal term) capital improvements costing more than \$35,000 are required by governmental regulation, Lessee may at its option terminate the Lease at that time.

11. INDEMNIFICATION OF LESSOR. Lessee hereby waives all claims against Lessor and agrees to indemnify and hold Lessor harmless from any claims, liability, loss, cost or expense (including reasonable attorneys fees) arising,

during the term of this Lease or any renewal thereof, out of (i) the presence on or use of the premises by Lessee or any other person; (ii) Lessee's failure to keep the premises in good condition and repair; (iii) any breach or default by Lessee of any covenant or obligation on its part to be performed; or (iv) any act or negligence of Lessee, its agents, contractors, servants, employees or licensees, but excluding any claims, liability, loss, cost or expense arising out of any act or negligence of Lessor, its agents, contractors, servants or employees. Lessee, at Lessee's cost and expense, shall secure and maintain a policy or policies of comprehensive liability insurance in amount of not less than \$500,000 for any one person injured or killed, and not less than \$1,000,000 for any one accident, and not less than \$100,000 for property damage. Lessor and any mortgagee of Lessor shall be provided certificates evidencing such policies and shall receive ten (10) days advance written notice of the cancellation of any insurance coverage.

12. UTILITIES. Lessee shall pay for all water, gas, heat, light and power, and for sewage, telephone and all other services supplied to the premises.

13. ENTRY BY LESSOR. Lessee shall permit Lessor and its agents to enter the premises at mutually agreeable times for the purposes of inspection, and at all reasonable times for the purposes of posting notices of non-responsibility for alterations, additions or repairs, or placing upon the premises any usual or ordinary "For Sale," "For Lease" or like signs.

14. ASSIGNMENT; SUBLETTING. Lessee may assign this Lease or sublet any part of the premises. No such assignment or sublease shall release Lessee from the obligations and restrictions contained in this Lease, and Lessee shall remain primarily liable for such obligations and restrictions, and Lessor shall have the right to proceed directly against Lessee.

15. INSOLVENCY OR BANKRUPTCY. If Lessee shall file a voluntary petition in bankruptcy or proceedings in bankruptcy shall be instituted against Lessee and Lessee is thereafter adjudicated bankrupt pursuant to such proceeds, or the court shall take jurisdiction of Lessee and Lessee's assets pursuant to

proceedings brought under the provisions of any federal reorganization act or similar state law, or a receiver (except a receiver mentioned in Article 19 hereof) of Lessee's assets shall be appointed, and such petition, proceeding or appointment is not withdrawn or is not vacated within sixty (60) days, or if Lessee executes an assignment for the benefit of its creditors, Lessor shall have the right to terminate this Lease forthwith, and from thenceforth Lessee shall have no rights in or to the demised premises or to any of the privileges herein conferred.

16. DEFAULT. If Lessee fails to cure any breach of this Lease within a reasonable time after receipt of notice thereof from Lessor (except for non-payment of rent, which shall be paid within ten (10) days after such notice), then Lessor, in addition to any other rights and remedies Lessor may have, shall have the immediate right of re-entry and may remove all persons and property from the premises; and any property so removed may be stored in a public warehouse or elsewhere at the expense of Lessee.

If Lessor elects to re-enter or takes possession pursuant to legal proceedings or any notice provided by law, Lessor may either terminate this Lease or Lessor may, from time to time, without terminating this Lease, relet the premises or any part thereof for such term (which may be for a term extending beyond the term of this Lease) and at such rental and upon such other terms and conditions as Lessor, in Lessor's sole discretion, may deem advisable, with the right to make reasonable and necessary alterations and repairs to the premises. If Lessor relets the premises, at Lessor's election, either (i) Lessee shall immediately pay to Lessor the cost and expenses of such reletting and of such alterations and repairs incurred by Lessor and the amount, if any, by which the rent reserved in this Lease for the period of such reletting (up to but not beyond the term of this Lease) exceeds the amount agreed to be paid as rent for the demised premises for such period; or (ii) the rents received by Lessor from such reletting shall be applied: first, to the payment of any indebtedness other than rent due hereunder from Lessee to Lessor; second, to the payment of any costs and expenses of such reletting and of such alterations and repair; third, to the payment of rent due and unpaid hereunder; and the

residue, if any, shall be held by Lessor and applied in payment of future rent as the same may become due and payable hereunder, and if the rentals received from such reletting during any month be less than that to be paid during that month by Lessee hereunder, Lessee shall pay such deficiency to Lessor monthly.

No re-entry by Lessor shall be construed as an election on Lessor's part to terminate this Lease unless a written notice of such intention be given to Lessee or unless the termination thereof be decreed by a court of competent jurisdiction, nor shall such re-entry be construed as a forcible entry. Lessee hereby waives all claim for damages that may be caused by Lessor's re-entering and taking possession of the premises or removing or storing property as herein provided, and will save Lessor harmless from any loss, cost or expense occasioned Lessor thereby.

Notwithstanding any such reletting without termination, Lessor may at any time thereafter elect to terminate this Lease for such previous breach. If Lessor at any time terminates this Lease for any breach, in addition to any other remedy Lessor may have, Lessor may recover from Lessee all damages incurred by Lessor by reason of such breach, including the cost of recovering the premises, and the worth at the time of such termination of the excess, if any, of the amount of rent or charges equivalent to rent reserved in this Lease for the remainder of the stated term over the then reasonable rental value of the premises for the remainder thereof, which amounts shall be immediately due and payable from Lessee to Lessor.

17. ARBITRATION. Any arbitration hereunder shall be in accordance with this Article 17. All arbitrators shall be disinterested persons, having at least five years experience in commercial and industrial real estate. The party desiring arbitration shall give notice to that effect to the other party, specifying in said notice the name and address of the person designated to act as its arbitrator. Within twenty (20) days after service of such notice, the other party shall give notice to the first party specifying the name and address of the person designated to act as its arbitrator. If the second party fails to notify the first party of the appointment of its arbitrator within the time specified, the second arbitrator shall be appointed in the same

manner as provided for the appointment of a third arbitrator where the two arbitrators appointed are unable to agree upon such appointment. The arbitrators so chosen shall meet within ten (10) days after the second arbitrator is appointed. If the said two arbitrators shall not agree upon the decision to be made in such dispute, they shall appoint a third arbitrator; and if they cannot agree on a third arbitrator or fail to appoint such arbitrator within ten (10) days after their meeting, the third arbitrator shall be selected by the parties within a further period of fifteen (15) days. If the parties do not so agree, then either party may request the then presiding judge of any court having jurisdiction thereover to appoint such third arbitrator. The decision of the arbitrators so chosen shall be given within thirty (30) days after the appointment of such third arbitrator. The decision of any two of the arbitrators so appointed shall be binding and conclusive upon the parties. The fees and expenses of the arbitrators shall be borne as the arbitrators direct. Except as otherwise provided in this Lease, the arbitration shall be conducted in accordance with the rules then obtaining of the American Arbitration Association, and judgment upon any decision rendered may be entered in any court having jurisdiction thereover.

18. SURRENDER OF LEASE. The mutual cancellation of this Lease shall not work a merger, and shall at the option of Lessor terminate all or any existing subleases or subtenancies, or may at the option of Lessor operate as an assignment to Lessor any or all such subleases or subtenancies.

19. RECEIVERSHIP. Neither the application by Lessor for the appointment of a receiver in an action to take possession of the premises, nor the appointment of such a receiver, shall be construed as an election on Lessor's part to terminate this Lease unless a written notice of such intention is given to Lessee.

20. WAIVER. The waiver by either party of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of such term, covenant or condition, or any subsequent breach of the same, or of any other term, covenant or condition herein contained. The subsequent acceptance of rent by Lessor shall not be deemed to be a waiver of any preceding breach by

Lessee of any term, covenant or condition of this Lease, other than the failure of Lessee to pay the particular rental so accepted.

21. UNLAWFUL DETAINER. Lessee covenants and agrees that nothing herein contained and no security or guaranty now or hereafter furnished the Lessor for the payment of the rent herein reserved, or for the performance by Lessee of any of the terms, covenants and conditions of this Lease, shall in any way be a bar or defense to any action in unlawful detainer by the Lessor against Lessee, or for the recovery of the demised premises in any action which Lessor may at any time commence, for or because of the breach of any term, covenant or condition of this Lease.

22. ATTORNEYS FEES. In the event of litigation or arbitration between the parties concerning this Lease or any term or condition hereof or any default hereunder, the prevailing party in such litigation or arbitration shall be entitled to receive from the other party a reasonable attorneys fee as fixed by the court or arbitrators.

23. REPAIRS AND MAINTENANCE. Lessee shall, at Lessee's sole cost, keep and maintain the premises and appurtenances (including but not being limited to landscaping) in good and sanitary order, condition, appearance and repair, hereby waiving all right to make repairs at the expense of Lessor. By entry hereunder, Lessee accepts the premises as being in good and sanitary order, condition, appearance and repair, and agrees on the last day of the term, or sooner termination of this Lease, to surrender to Lessor the premises and appurtenances in the same condition as when received, reasonable use and wear thereof excepted, and to remove Lessee's trade fixtures, machinery and equipment and those of its suppliers at its own cost, and to repair any damage caused by such removal.

24. DESTRUCTION OF PREMISES. If the building on the demised premises is damaged or destroyed during the term of this Lease, this Lease shall not terminate, but Lessee shall, as soon as is practicable after the damage or destruction, and with all due diligence, repair or rebuild the same to substantially

the condition in which the building was prior to such damage or destruction. The rights of the parties hereto arising upon damage to or destruction of the premises shall be governed by the provisions of this agreement. If such damage or destruction occurs during the last three (3) years of the term hereof (or of any renewal term) and the cost of repairing or rebuilding will exceed \$35,000, Lessee may at its election terminate this Lease on ten (10) days prior written notice to Lessor, and upon such termination there shall be no further liability between the parties hereto, except that Lessee shall pay over to Lessor the net insurance proceeds recovered in connection with such damage or destruction. Nothing herein shall require Lessee to repair or rebuild where damage or destruction is the result of the negligence of Lessor, its agents, servants or employees.

25. TAXES. As additional rental hereunder, Lessee agrees to pay before delinquency all real property taxes and assessments which have become or may become a lien upon the premises (or are otherwise imposed or assessed on the premises) or any portion thereof or upon improvements thereon or improvements added thereto during the term of this Lease. Lessee shall provide Lessor a copy of the receipt for each such payment with thirty (30) days after the last day on which such payment is due. Lessee shall also reimburse Lessor, upon demand, any and all taxes payable by Lessor (other than income, inheritance or transfer taxes) whether or not now customary or within the contemplation of the parties hereto: (a) upon, allocable to or measured by or on the rental payable hereunder, including without limitation any gross receipts tax or excise tax levied with respect to the receipt of such rental; or (b) upon or with respect to the possession, leasing, operation, management, maintenance, alteration, repair, use or occupancy by Lessee of the premises or any portion thereof; or (c) upon this transaction or any document to which Lessee is a party creating or transferring an interest or an estate in the premises. If the taxing authority requires Lessee to pay the taxes on the premises at a date earlier than would be required if Lessor were responsible for said taxes, Lessor shall, at the request of Lessee, direct the taxing authority to send the tax bills to Lessor and Lessor agrees to forward said tax bills promptly to Lessee for payment. If Lessee fails to pay such taxes, in addition to all other remedies

Lessor has hereunder, Lessor shall have the right to pay any or all such taxes and to recover reimbursement therefor from Lessee. If the taxing authority directs notice of assessment to Lessor and Lessor fails to provide Lessee with said notice at least ten (10) days prior to the last day for appeal, Lessee shall not be responsible for payment of any tax increase resulting from such assessment. Lessee shall have the right to contest the amount of validity of any tax payable under this Article 25 which Lessee deems improperly or illegally levied against the premises, and for that purpose shall have the right to institute such proceedings in the name of Lessor as it may deem necessary, provided the expenses thereof shall be paid by Lessee. Taxes for the year in which this Lease terminates shall be equitably prorated.

26. INSURANCE. Lessee shall keep the premises insured against loss or damage by fire with extended coverage and with standard mortgagee clause to the extent of 100 percent of the replacement value of the improvements on said premises (including any improvements made during the term hereof). Lessee shall have the right to cause the policies of insurance required hereunder to exclude from coverage the first \$200,000 of loss, and Lessee hereby agrees to be responsible to Lessor and any first mortgagee for the payment of such sum under the same terms and conditions as though Lessee were the issuer under the policy of insurance maintained; provided that the deductible provision is acceptable to any lending institution that may place a first mortgage on the premises.

The insurance hereunder shall be payable to Lessor and Lessee as their interests may appear, and shall be written by Golden State Insurance Company, Ltd. or such other insurance company as is mutually agreed upon. Lessor and Lessor's mortgagee shall be provided with certificates of insurance and ten (10) days advance written notice of the cancellation of any insurance coverage. If Lessee shall fail to obtain such insurance or to keep the same in full force and effect, Lessor may procure the same, and Lessee shall upon demand reimburse Lessor for the premiums thereon.

Lessee agrees that if Lessor encumbers or has encumbered the demised premises to a lender by first deed of trust, mortgage or other security device, at Lessor's discretion loss shall be made payable to such lender. Lessor agrees that monies, to the extent of insurance proceeds received by either Lessor or

such lender under a policy of insurance described in this Article will be disbursed in installments to Lessee or to Lessee's building contractor according to the progress of the work of repairing or building the demised premises under Article 24.

27. ADDITIONAL CONSTRUCTION. If at any time, or from time to time, Lessee should desire to expand or extend the improvements, Lessor will undertake to have such additional construction work done and pay for the same; provided, however, the monthly rental hereunder shall be increased in an amount to be negotiated by the parties hereto. If terms cannot be agreed upon, Lessee may construct the desired improvements at its own expense.

28. OPTION TO PURCHASE. In the event Lessor is unwilling or unable to undertake the additional construction in accordance with Article 27, or the parties are unable to agree on a fair rental, Lessee will have the option to purchase the property at its fair market value. If the parties cannot agree on the fair market value, it will be settled by arbitration as provided in Article 17; provided, however, that in no event shall the purchase price be less than \$800,764.00.

29. CONDEMNATION.

A. If all of the premises is taken or condemned for a public or quasi-public use, this Lease shall terminate as of the date title to the condemned real estate vests in the condemnor, the rent herein reserved shall be apportioned and paid in full by Lessee to Lessor to that date, all rent prepaid for periods beyond that date shall forthwith be repaid by Lessor to Lessee, and neither party shall thereafter have any liability hereunder.

B. If less than the entire premises is taken or condemned for a public or quasi-public use and the nature and extent of such taking or condemnation are such that Lessee's business cannot be continued on the remaining portion of the premises, then this Lease shall terminate thirty (30) days after Lessee gives to Lessor notice of its election so to do. Such notice must be given within sixty (60) days after the date title vests in the condemnor or the date

the condemnor takes possession of the condemned real estate, whichever first occurs. Upon such termination the rent herein reserved shall be apportioned and paid in full by Lessee to Lessor to that date, all rent prepaid for periods beyond that date shall forthwith be repaid by Lessor to Lessee, and neither party shall thereafter have any liability hereunder.

C. If less than the entire premises is taken or condemned for a public or quasi-public use, and the nature and extent of such taking or condemnation are such that Lessee's business can be continued on the remaining portion of the premises, Lessee shall restore the building or other improvements upon the demised land to a condition and to a size as nearly comparable as reasonably possible to the condition and size thereof immediately prior to the taking, and there shall be an equitable abatement of the minimum rent according to the value of the premises before and after the taking.

D. In the event that the parties are unable to agree upon the amount of abatement of rent hereunder or whether Lessee's business can be continued on the premises, either party may submit the issue for arbitration, pursuant to the provisions of Article 17 hereof.

E. In the event of a taking or condemnation of all or any portion of the premises for a public or quasi-public use, the award shall be distributed in the following order of priority:

(i) First Priority. Lessee shall be entitled to an amount equal to the amount included in the award for trade fixtures and equipment owned by Lessee or suppliers of goods or services to Lessee and the unamortized value of any improvements installed or constructed on the premises at Lessee's sole cost and expense, together with reimbursement for moving expenses.

(ii) Second Priority. Lessor shall be entitled to an amount equal to the value of the premises (exclusive of improvements installed or constructed at Lessee's expense) or \$762,632.00, whichever is greater.

(iii) Third Priority. Lessee shall be entitled to the amount included in the award for the value of the unexpired term of the lease if this Lease shall have terminated by reason of the taking or condemnation.

(iv) Fourth Priority. The balance of the award, if any, shall be paid to Lessor.

If only part of the premises is taken or condemned for a public or quasi-public use, the net proceeds (after deducting the costs of collecting the award) of any award payable to Lessor hereunder (herein called "the net condemnation proceeds") shall be held in trust by Lessor or any mortgagee of the premises and released for the purpose of paying the cost of restoring the building and other improvements damaged by reason of the taking or condemnation. Such net condemnation proceeds shall be released from time to time as the work progresses to Lessee or to Lessee's contractors. If such net condemnation proceeds are not adequate, Lessee shall pay the amount by which such cost will exceed such net condemnation proceeds. If such net condemnation proceeds are more than adequate, the amount by which such net condemnation proceeds exceed the cost of restoration will be retained by Lessor or applied to repayment of any mortgage secured by the premises.

30. SUBORDINATION.

A. This Lease, at Lessor's option, shall be subordinate to any ground lease, mortgage, deed of trust or any other hypothecation of security now or hereafter placed upon the real property of which the premises are a part and to any and all advances made on the security thereof and to all renewals, modifications, consolidations, replacements and extensions thereof. If any mortgagee, trustee or ground lessor shall elect to have this Lease prior to the lien of its mortgage, deed of trust or ground lease, and shall give written notice thereof to Lessee, this Lease shall be deemed prior to such mortgage, deed of trust or ground lease, whether this Lease is dated prior to subsequent to the date of said mortgage, deed of trust or ground lease or the date of recording thereof.

B. Lessee agrees to execute any documents required to effectuate such subordination or to make this Lease prior to the lien of any mortgage, deed of trust or ground lease, as the case may be, and failing to do so within ten (10) days after written demand does hereby make, constitute and irrevocably appoint Lessor as Lessee's attorney in fact and in Lessee's name, place and stead to do so.

C. Anything in this Article 30 to the contrary notwithstanding, Lessee's right to quiet possession of the premises shall not be disturbed so long as Lessee is not in default hereunder and this Lease is not otherwise terminated pursuant to its terms.

31. ESTOPPEL CERTIFICATE.

A. Lessee shall at any time upon not less than ten (10) days prior written notice from Lessor execute, acknowledge and deliver to Lessor a statement in writing (i) certifying that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease as so modified is in full force and effect) and the date to which the rent and other charges are paid in advance, if any; and (ii) acknowledging that there are not, to Lessee's knowledge, any uncured defaults on the part of Lessor hereunder, or specifying such defaults if any are claimed. Any such statement may be conclusively relied upon by any prospective purchaser or encumbrancer of the premises.

B. Lessee's failure to deliver such statement within such time shall be conclusive upon Lessee (i) that this Lease is in full force and effect without modification, except as may be represented by Lessor; (ii) that there are no uncured defaults in Lessor's performance; and (iii) that not more than one month's rent has been paid in advance.

C. If Lessor desires to finance or refinance the premises, or any part thereof, Lessee hereby agrees to deliver to any lender designated by Lessor such annual reports to stockholders of Lessee as may be reasonably required by such lender. All such annual reports shall be received by Lessor in confidence and shall be used only for the purposes herein set forth.

32. VALIDITY UNDER RULE AGAINST PERPETUITIES. Anything herein contained to the contrary notwithstanding, and in order to guard against any possible invalidity of this Lease under the so-called "Rule Against Perpetuities," the parties expressly agree that in case the term provided for in Article 3 hereof shall not have commenced for whatever reason within twenty-one (21) years after the date hereof, this Lease shall never take effect and the

respective obligations of the parties hereto shall thereupon cease and terminate.

33. SUCCESSORS. The covenants and conditions herein contained shall, subject to the provisions hereof concerning assignment, apply to and bind the heirs, successors, executors, administrators and permitted assigns of the parties hereto.

34. CAPTIONS. The caption headings in this Lease are for convenience only and are not a part of this Lease and do not in any way limit or amplify the terms and provisions of this Lease. The terms Lessor and Lessee shall apply to the parties hereto as may be applicable and without regard to gender or number.

35. NOTICES. All notices hereunder shall be deemed sufficient if in writing and delivered personally or deposited in the United States mail, postage prepaid, certified and addressed to the following addresses:

LESSOR            1441 St. Nicholas Avenue  
New York, N.Y. 10033

LESSEE            Office of the Secretary  
Foremost-McKesson, Inc.  
One Post Street  
San Francisco, California 94104

copy to

or to such other addresses as may be designated from time to time in writing.

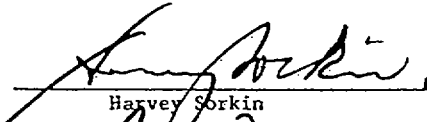

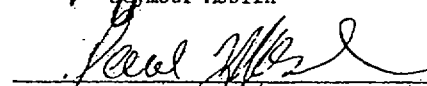
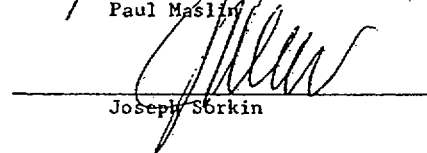
36. CONTROLLING LAW. This agreement shall be controlled and interpreted according to the laws of the State of California.

37. SHORT FORM LEASE. Upon the request of either Lessor or Lessee, Lessor and Lessee agree that they will execute a short form lease setting forth the expiration date and have it properly acknowledged by Lessor in order that it may be recorded.

38. MODIFICATION. This Lease shall not be modified or amended in any respect except by an agreement in writing signed by the party against whom such modification or waiver is sought to be enforced.

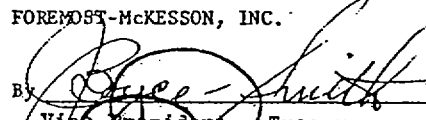
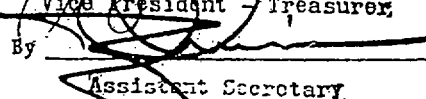
EXECUTED in duplicate the day and year first above written.

LESSOR

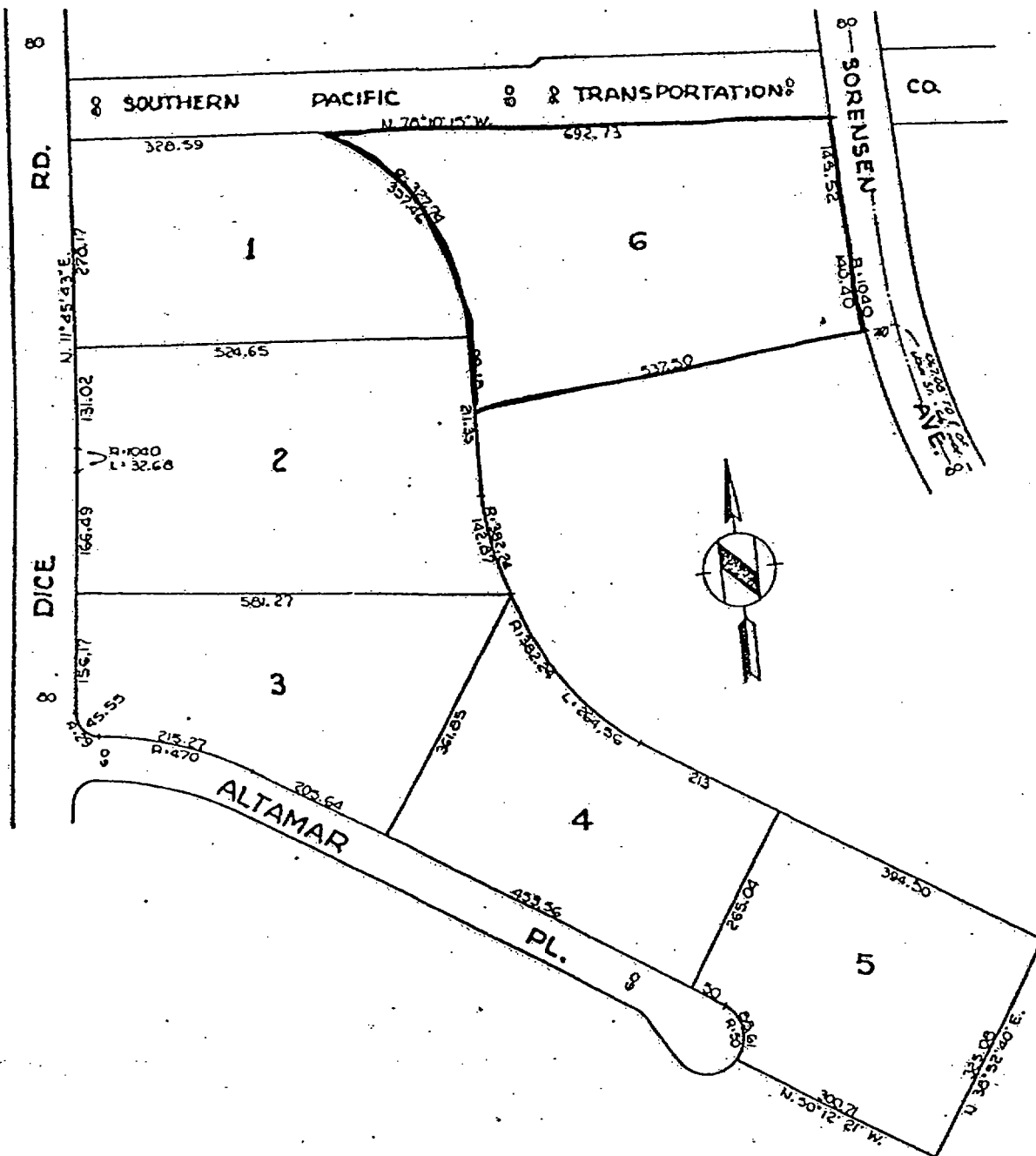
  
Harvey Sorkin  
  
Seymour Moslin  
  
Paul Maslin  
  
Joseph Sorkin

LESSEE

FOREMOST-MCKESSON, INC.

By   
Vice President - Treasurer  
By   
Assistant Secretary

OK  
MS  
OK OKR  
MS



# PARCEL MAP BOOK 48 PAGE 11

This is not a survey of the land, but is compiled for information only, nor is it a part of the report or policy to which it may be attached.

LEGAL DESCRIPTION

PARCEL 6 in the City of Santa Fe Springs, County of Los Angeles, State of California, as shown on PARCEL MAP NO. 3393 filed for record October 11, 1973, in Book 48, Page 11 of Parcel Maps, in the Office of the County Recorder of said County.

TOGETHER with all of grantor's right, title and interest in and to that portion of the westerly half of Sorensen Avenue (80 feet wide) abutting the above described real property.

EXCEPTING therefrom that portion of said property lying below a depth of five hundred (500) feet measured vertically from the contour of the surface thereof; provided, however, that grantor, its successors and assigns shall not have the right for any purpose whatsoever to enter upon, into or through the surface of the property granted herein, or any part thereof, lying between said surface and five hundred (500) feet below said surface, as excepted by Southern Pacific Industrial Development Company, a Texas corporation, in deed recorded October 21, 1975, as Instrument No. 363.

SUBJECT to all easements, rights of way, encumbrances, covenants, conditions, restrictions, obligations and liabilities as may appear of record.

Plans and specifications for the improvements by COLLEY  
ENGINEERS & CONSTRUCTORS, INC.

DrawingsDated

|           |                |
|-----------|----------------|
| C-628-A-1 | July 23, 1975  |
| M-1       | July 17, 1975  |
| P-1       | July 23, 1975  |
| P-2       | July 23, 1975  |
| P-3       | July 23, 1975  |
| P-4       | July 23, 1975  |
| Q-1       | July 03, 1975  |
| Q-2       | ---            |
| Q-3       | July 23, 1975  |
| Q-4       | July 09, 1975  |
| R-1       | March 20, 1975 |
| R-2       | March 20, 1975 |
| R-3       | May 06, 1975   |
| R-4       | May 06, 1975   |
| R-5       | May 06, 1975   |
| R-6       | May 06, 1975   |
| R-7       | May 06, 1975   |
| R-8       | March 20, 1975 |
| R-9       | May 06, 1975   |
| R-10      | July 23, 1975  |
| R-11      | July 23, 1975  |
| S-1       | July 1975      |
| S-2       | ---            |
| S-3       | July 03, 1975  |
| S-4       | July 03, 1975  |
| S-5       | July 03, 1975  |
| S-6       | July 03, 1975  |
| S-7       | July 15, 1975  |

Specifications

August 21, 1975

EXCLUDING all tanks, pumps, piping, scales and equipment  
related to the repackaging operations

## FIRST AMENDMENT OF LEASE

This First Amendment of Lease is entered into as of the 30th day of April, 1976, by and between HARVEY SORKIN, an individual; SEYMOUR MOSLIN, an individual; PAUL MASLIN, an individual; and JOSEPH SORKIN, an individual, hereinafter referred to as Lessor, and FOREMOST-MCKESSON, INC., a Maryland corporation, hereinafter referred to as Lessee,

## WITNESSETH:

WHEREAS, the parties entered into a lease dated December 15, 1975, for certain premises situated at 9005 Sorensen Street in the City of Santa Fe Springs, County of Los Angeles, State of California, hereinafter referred to as the Lease; and

WHEREAS, the parties desire to amend said Lease in certain respects hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual promises hereinafter set forth, the parties hereby agree as follows:

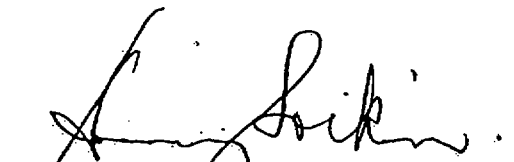
1. Notwithstanding the provisions of Paragraph 4.B., the rent payable under Paragraph 4.A. is \$6,037.50 per month.

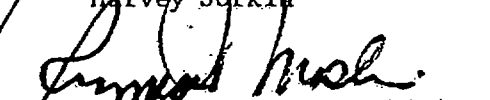
2. The obligation to pay rent pursuant to Paragraph 4.A. shall commence on May 1, 1976.


3. Pursuant to the provisions of Paragraph 29, the Lease is subordinate to that certain deed of trust to be executed June 1, 1976 by and between Lessor as trustor and Title Insurance and Trust as trustee for Troy Savings Bank

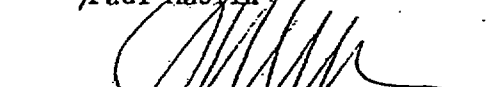
4. Except as specifically set forth in this First Amendment of Lease, the Lease shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have executed this First Amendment of Lease as of the day and year first hereinabove set forth.

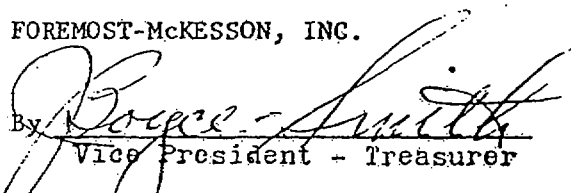
  
\_\_\_\_\_  
Harvey Sorkin


  
\_\_\_\_\_  
Seymour Moslin

  
\_\_\_\_\_  
Paul Maslin

  
\_\_\_\_\_  
Joseph Sorkin

FOREMOST-MCKESSON, INC.

By   
\_\_\_\_\_  
Vice President - Treasurer

By   
\_\_\_\_\_  
Assistant Secretary

anr

6 for  
JMB

USCA 5501  
LK 1540  
go  
1/1/78

SECOND AMENDMENT OF LEASE

This Amendment of Lease is entered into as of the 10th day of May, 1978, by and between HARVEY SORKIN, an individual; SEYMOUR MOSLIN, an individual; PAUL MASLIN, an individual; and JOSEPH SORKIN, an individual, hereinafter referred to as Lessor, and FOREMOST-MCKESSON, INC., a Maryland corporation, hereinafter referred to as Lessee,

WITNESSETH:

WHEREAS, Lessor and Lessee entered into a lease dated December 15, 1975, as amended April 30, 1976, for certain premises situated at 9005 Sorensen Street, Santa Fe Springs, California, hereinafter referred to as the Lease; and

WHEREAS, the parties desire to amend said Lease in certain respects hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual promises hereinafter set forth, the parties hereby agree as follows:


1. The self-insurance provision of Article #26 is hereby amended to read as follows:

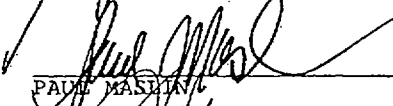
Lessee shall have the right to cause the policies of insurance required hereunder to exclude from coverage the first \$500,000 of loss, and Lessee hereby agrees to be responsible to Lessor and any first mortgagee for the payment of such sum under the same terms and conditions as though Lessee were the issuer under the policy of insurance maintained.

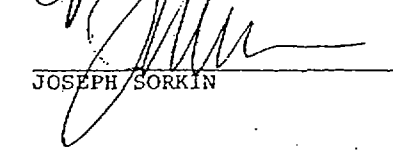
2. Except as specifically set forth in this Amendment of Lease, the Lease shall remain in full force and effort.

IN WITNESS WHEREOF, the parties have executed this Amendment of Lease as of the day and year first hereinabove set forth.


  
HARVEY SORKIN

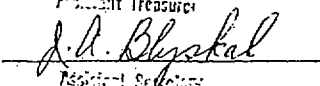
  
SEYMOUR MOSLIN

  
PAUL MASLIN

  
JOSEPH SORKIN

FOREMOST-MCKESSON, INC.

By:   
President Treasurer

By:   
Assistant Secretary

ACCEPTED:

TROY SAVINGS BANK

By:  SVP.

|                                     |     |
|-------------------------------------|-----|
| APPROVED<br>AS TO<br>LEGAL FORM     | CP6 |
| TERMS AND<br>CONDITIONS<br>APPROVED | ND  |

USCASS01

Recording Requested by  
And when recorded return to:

ORIGINAL

HOLLANDER & LEWIS  
One Market Plaza  
Steuart Street Tower, 13<sup>th</sup> Floor  
San Francisco, California 94105  
Attention: James R. Hollander

SFS  
Sorenson

---

ASSIGNMENT OF LEASE

FOR VALUABLE CONSIDERATION, the receipt and sufficiency of which is hereby acknowledged, PCS HOLDING CORPORATION, a Delaware corporation, successor-by-merger to LP Holding Corporation, formerly known as Foremost McKesson, Inc., a Maryland corporation ("Assignor"), as lessee under that certain Lease, dated as of December 15, 1975, as amended, by and between Harvey Sorkin, Seymour Moslin, Paul Maslin and Joseph Sorkin, as lessor, and Foremost-McKesson, Inc., a Maryland corporation, as lessee (the "Lease"), hereby assigns, sells, transfers, sets over and delivers unto MCKESSON HBOC, INC., a Delaware corporation ("Assignee"), all of Assignor's estate, right, title and interest in and to the Lease.

This Assignment is made without recourse and without representation or warranties of any kind. This Assignment shall inure to the benefit of Assignee, its successors and assigns, and shall be binding upon Assignor, its successors and assigns.

Assignee hereby assumes the performance of all of the terms, covenants and conditions imposed upon Assignor under the Lease, whether accruing or arising before, on or after the date of delivery of this Assignment.

By its acceptance of this Assignment of Lease Assignee agrees to indemnify, defend and hold Assignor harmless from and against any and all claims, demands, liabilities and obligations of lessee under the Lease, whether arising before, on or after the date of delivery of this Assignment.

DATE: March 23, 2000

ASSIGNOR

PCS HOLDING CORPORATION,  
a Delaware corporation,

By: 

Its: SR Vice Pres

By: 

Its: Secretary

ASSIGNEE

MCKESSON HBOC, INC.,  
a Delaware corporation

By: 

Its: Assistant Secretary

STATE OF PENNSYLVANIA )

SS.

COUNTY OF Cumberland )

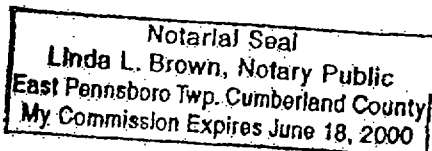
On this 3<sup>rd</sup> day of April, 2000, before me,  
Linda L. Brown, a Notary Public, State of Pennsylvania, duly  
commissioned and sworn, personally appeared Elliott S. Gerson and  
J. Lawrence Gilman, known to me (or proved to me on the basis of satisfactory  
evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument  
and acknowledged to me that he/she/they executed the same in their authorized capacities  
as Sr Vice President and Secretary of PCS Holding Corporation,  
and that by his/her/their signature(s) on the instrument the entity upon behalf of which the  
person acted, executed the instrument.

WITNESS my hand and official seal.

Linda L. Brown

Notary Public

(Seal)



STATE OF CALIFORNIA )

)SS

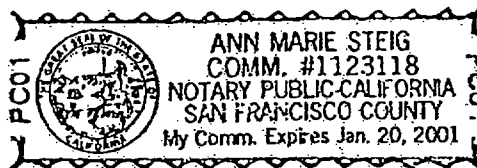
COUNTY OF SAN FRANCISCO )

On this 28<sup>th</sup> day of March, 2000, before me, Ann Marie Steig, a  
Notary Public, State of California, duly commissioned and sworn, personally appeared  
\_\_\_\_\_ known to me (or proved to me on the basis of  
~~satisfactory evidence~~) to be the person(s) whose name(s) is/are subscribed to the within  
instrument and acknowledged to me that he/she/they executed the same in his/her/their  
authorized capacities, and that by his/her/their signature(s) on the instrument the  
person(s) executed the instrument.

WITNESS my hand and official seal.

Ann Marie Steig  
Notary Public

(Seal)



# **Attachment “J”**

### FIRST AMENDMENT OF SUBLEASE

THIS FIRST AMENDMENT OF SUBLEASE (this "First Amendment") is made as of this 27<sup>th</sup> day of June, 2003 by and between MCKESSON CORPORATION, a Delaware corporation ("Sublandlord"), successor-in-interest to Foremost-McKesson, Inc., a Maryland corporation, and ENVIRONMENTAL MATERIALS AND RECYCLING, LLC, a California limited liability company ("Subtenant").

WHEREAS, Sublandlord and Subtenant entered into that certain Sublease, dated as of June 19, 2003 (the "Sublease") for the certain premises located at 9005 Sorensen Street, Santa Fe Springs, California; and

WHEREAS, Sublandlord and Subtenant desire to amend the Sublease to modify certain provisions thereof.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, Sublandlord and Subtenant agree as follows:

1. All capitalized terms used herein, unless otherwise defined herein, shall have the meanings set forth in the Sublease.
2. The reference to McKesson Information Solutions in the address for remittance of rent payments set forth in the second paragraph of Section 5 of the Sublease is hereby deleted.
3. Section 10 of the Sublease is hereby amended to provide that Seven Thousand Five Hundred Dollars (\$7,500.00) paid to Sublandlord as part of the initial payment by Subtenant shall be applied to Base Rent for the month of July, 2003, rather than the month of June, 2003.
4. Section 33 of the Sublease is hereby amended to delete McKesson Medical-Surgical Minnesota Supply Inc. as a recipient of notices to be sent by Subtenant pursuant to the Sublease. All notices should be sent to McKesson Corporation with copies to Trammell Crow Company at the addresses and in the manner designated therein.
5. All other terms and conditions of the Sublease shall remain in full force and effect. In the event of any conflict between the provisions of the Sublease and the provisions of this First Amendment, the provisions of this First Amendment shall prevail.

IN WITNESS WHEREOF, the parties hereto have caused this First Amendment of Sublease to be executed as of the day and year first above written.

SUBLANDLORD:

MCKESSON CORPORATION,

a Delaware corporation

By: 

Its: ASSISTANT SECRETARY

SUBTENANT:

ENVIRONMENTAL MATERIALS AND RECYCLING, LLC,

a California limited liability company

By: 

Its: President

# **Attachment “K”**

## SECOND AMENDMENT OF SUBLEASE

THIS SECOND AMENDMENT OF SUBLEASE (this "Second Amendment") is made as of this 8<sup>th</sup> day of October, 2003 by and between MCKESSON CORPORATION, a Delaware corporation ("Sublandlord"), successor-in-interest to Foremost-McKesson, Inc., a Maryland corporation, and ENVIRONMENTAL MATERIALS AND RECYCLING, LLC, a California limited liability company ("Subtenant").

WHEREAS, Sublandlord and Subtenant entered into that certain Sublease, dated as of June 19, 2003, as amended by First Amendment of Sublease, dated June 27, 2003 (as amended, the "Sublease") for the certain premises located at 9005 Sorensen Street, Santa Fe Springs, California; and

WHEREAS, Sublandlord and Subtenant desire to amend the Sublease to modify certain provisions thereof.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, Sublandlord and Subtenant agree as follows:

1. All capitalized terms used herein, unless otherwise defined herein, shall have the meanings set forth in the Sublease.

2. Section 9(b) of the Sublease shall be amended to read as follows:

"(b) A separate meter for electricity consumed on the Premises has been installed, and Subtenant shall pay all charges for electricity directly to the utility providing electric service."

3. All other terms and conditions of the Sublease shall remain in full force and effect. In the event of any conflict between the provisions of the Sublease and the provisions of this Second Amendment, the provisions of this Second Amendment shall prevail.

[Remainder of Page Intentionally Left Blank]




IN WITNESS WHEREOF, the parties hereto have caused this Second Amendment of Sublease to be executed as of the day and year first above written.

SUBLANDLORD:

MCKESSON CORPORATION,

a Delaware corporation

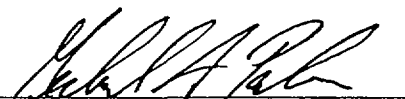
By: 

Its: ASSISTANT SECRETARY

SUBTENANT:

ENVIRONMENTAL MATERIALS AND RECYCLING, LLC,

a California limited liability company

By: 

Its: President

# **Attachment “L”**

| Employee Name               | Last Known Address/Phone | Last Known Date<br>Address Was<br>Current | Position/s<br>Held                              | Period of<br>Employment by<br>McKesson at<br>Santa Fe Springs<br>Site |
|-----------------------------|--------------------------|---|---|---|
| FOIA ex 6, Personal Privacy |                          | 12/10/1986                                | Repacker  | 11/25/75 - ?  |
| FOIA ex 6, Personal Privacy |                          | 2/17/1994                                 | Production<br>Manager;<br>Operations<br>Manager | 1/85 - 10/86  |
| FOIA ex 6, Personal Privacy |                          | 2005                                      | Repacker;<br>Assistant Plant<br>Manager         | 1977 - 1980   |
| FOIA ex 6, Personal Privacy |                          | 12/10/1986                                | Repacker  | 9/25/78 - ?   |
| FOIA ex 6, Personal Privacy |                          | 12/22/1993                                | Tank Driver;<br>Lean Repacker                   | 1979 - 1985   |
| FOIA ex 6, Personal Privacy |                          | 2/23/1994                                 | Assistant Bulk<br>Plant Manager                 | 4/1977 - 1978   |
| FOIA ex 6, Personal Privacy |                          | 12/10/1986                                | Repacker<br>(leadman)                           | 1976 - 1978/79  |
| FOIA ex 6, Personal Privacy |                          | 12/10/1986                                | Buyer   | 1976 - 1978; 1978 -<br>1985   |
| FOIA ex 6, Personal Privacy |                          | 6/13/1994                                 | Regional Field<br>Service<br>Engineer           | 1973 - 1979 (All<br>Western Sites)                                    |
| FOIA ex 6, Personal Privacy |                          | 12/10/1986                                | Area<br>Operations<br>Manager                   | ?   |
| FOIA ex 6, Personal Privacy |                          | 12/10/1986                                | Repacker  | 9/25/78 - ?   |
| FOIA ex 6, Personal Privacy |                          | 2005                                      | Repacker  | 11/7/77 - 1986  |
| FOIA ex 6, Personal Privacy | ?                        |   | ?   | ?   |
| FOIA ex 6, Personal Privacy |                          | ?   | ?   | ?   |
| FOIA ex 6, Personal Privacy |                          | ?   | ?   | ?   |

|                             |          |            |                              |                    |
|-----------------------------|----------|------------|------------------------------|--------------------|
| FOIA ex 6, Personal Privacy |          | 2005       | Maintenance                  | 2/23/81 - ?        |
| FOIA ex 6, Personal Privacy |          | ?          | ?                            | ?                  |
| FOIA ex 6, Personal Privacy |          | 11/16/1993 | Leadman                      | 8/8/77 - 1986      |
| FOIA ex 6, Personal Privacy |          | 11/17/1993 | Repacker                     | 6/27/77 - 1986     |
| FOIA ex 6, Personal Privacy |          | 12/10/1986 | Admin. Mgr.                  | 6/24/74 - 12/30/80 |
| FOIA ex 6, Personal Privacy |          | 2/16/1994  | Business Manager             | 1984 - 1/1985      |
| FOIA ex 6, Personal Privacy |          | 2/10/2006  | Repacker                     | 11/25/75 - 1986    |
| FOIA ex 6, Personal Privacy | ?        | ?          | ?                            | ?                  |
| FOIA ex 6, Personal Privacy |          | 5/16/1994  | District Manager             | 1976 - 1986        |
| FOIA ex 6, Personal Privacy | DECEASED | CURRENT    | ?                            | ?                  |
| FOIA ex 6, Personal Privacy |          | 12/10/1986 | Clerk                        | 02/3/86 - ?        |
| FOIA ex 6, Personal Privacy |          | 7/29/1994  | Bulk Service Manager         | 1977 - 1985        |
| FOIA ex 6, Personal Privacy |          | 12/7/2005  | Asst. Operation Manager      | 11/85 - 1/1987     |
| FOIA ex 6, Personal Privacy |          | 12/10/1986 | Repacker/ Fork Lift Operator | 9/19/68 - ?        |
| FOIA ex 6, Personal Privacy |          | 4/14/1994  | Repacker/ Relief Driver      | 3/4/76 - 1978      |
| FOIA ex 6, Personal Privacy |          | 2005       | Repacker/ Driver             | ?                  |
| FOIA ex 6, Personal Privacy |          | 10/12/1993 | Production Supervisor        | 10/75 - 82/83      |
| FOIA ex 6, Personal Privacy |          | 12/10/1986 | Repacker                     | 8/27/73 - ?        |
| FOIA ex 6, Personal Privacy |          | 1/31/1994  | Bulk Installation Manager    | 1973 - ?           |
| FOIA ex 6, Personal Privacy |          | 2005       | Manager                      | 1980 - late 1984   |
| FOIA ex 6, Personal Privacy | ?        |            | ?                            | ?                  |

|                             |  |           |         |                 |
|-----------------------------|--|-----------|---------|-----------------|
| FOIA ex 6, Personal Privacy |  | 4/14/1994 | Chemist | 4/1980 - 3/1986 |
|-----------------------------|--|-----------|---------|-----------------|

# **Attachment “M”**

# Material Safety Data Sheet Index

| Manufacturer's Name            | Trade Name or Product Name    | Chemical Name   | Date        | Bates Number                |
|--------------------------------|-------------------------------|---|-------------|-----------------------------|
| ARCO Chemical Co.              | Methyl Ethyl Ketone           | Butanone; MEK   | None listed | MKIL192791-92               |
| Armor All Products             | Triton R N-101                | Nonylphenol Surfactant                                | Jan-90      | MKIL058410-13               |
| Celanese Chemical Co.          | Paraformaldehyde              | Paraformaldehyde                                      | Mar-86      | MKIL05071-72                |
| Celanese Chemical Co.          | Formcel                       | Formaldehyde in methanol                              | Mar-86      | MKIL05068-70                |
| Chevron                        | Chevron Refined Wax 128       |   | 11/19/1985  | MKIL05055-56                |
| Chevron                        | Chevron Thinner 225           | Paraffins, toluene, benzene                           | Sep-80      | MKIL14947-48                |
| Chevron                        | Chevron Thinner 350B          | Paraffins, Aromatics, Benzene                         | Nov-80      | MKIL14944-46                |
| Chevron                        | Chevron Thinner 410B          | Paraffins, Aromatics, Benzene                         | Jun-78      | MKIL14929-32                |
| Chevron                        | Chevron Thinner 625           | Paraffins, Aromatics, Xylene, Toluene, Benzene        | Oct-80      | MKIL14937-39                |
| Chevron                        | Chevron Candle Wax            | Refined base waxes                                    | Jan-86      | MKIL05249-50                |
| Chevron                        | Chevron Diesel Fuel No. 2     | Petroleum mid-distillate                              | 1/16/1986   | MKIL21006, 08               |
| Cyanamid                       | Aerodri 104 AF Dewatering Aid | Ethyl Alcohol   | Mar-83      | MKIL05241-44                |
| Cyanamid                       | Superfloc 362 Flocculant      |   | 6/18/1982   | MKIL05245-48                |
| Diamond Shamrock Chemicals Co. | Methylene Chloride            | Dichloromethane                                       | 11/11/1985  | MKIL05210-13                |
| Diamond Shamrock Chemicals Co. | 1,1,1-Trichloroethane         | 1,1,1-Trichloroethane                                 | 10/31/1985  | MKIL05214-17                |
| Dow Chemical                   | Dowicide ® A Antimicrobial    | Sodium O-phenylphenate tetrahydrate, sodium hydroxide | 7/31/1985   | MKIL05207, 5255, 5256, 5258 |

|                   |                                      |  |             |                       |
|-------------------|--------------------------------------|--|-------------|-----------------------|
| Dow Chemical      | Ethylene Glycol                      | Ethylene Glycol                                      | 3/14/1986   | MKIL05251-54,<br>5206 |
| Dow Chemical      | Methylenechloride<br>Tech            | Methylene Chloride                                   | 1/27/1982   | MKIL192716-19         |
| Dow Chemical      | Chlorothene NU Solvent               | 1,1,1-Trichloroethane                                | 1/3/1974    | MKIL192647-48         |
| Dow Chemical      | Polyglycol E-1000                    | Polyethylene glycol                                  | 3/12/1986   | MKIL05064-65          |
| Du Pont           | Methylene Chloride                   | Dichloromethane                                      | None listed | MKIL192714-15         |
| Du Pont           | Methylamine Solutions                | Monomethylamine,<br>Dimethylamine,<br>Trimethylamine | Feb-83      | MKIL04600-03          |
| Du Pont           | Hydroxyacetic Acid -<br>70% Solution | Glycolic Acid;<br>Hydroxyethanoic Acid               | Dec-82      | MKIL04595-98          |
| Du Pont           | Methylene Chloride                   | Methylene Chloride;<br>Dichloromethane               | Nov-72      | MKIL192670-71         |
| Exxon Chemicals   | Methyl Ethyl Ketone                  | 2-Butanone   | 5/23/1985   | MKIL192795-98         |
| Fehr Bros.        | Methylene Chloride                   | Dichloromethane                                      | Aug-85      | MKIL192672-75         |
| Getty Oil Company | Acetone                              | 2-Propanone;<br>Dimethyl Ketone                      | None listed | MKIL04438-39          |
| Getty Oil Company | Gettysolve L                         | Lacquer Diluent                                      | None listed | MKIL04433-34          |
| Getty Oil Company | Gettysolve R                         | Rubber Solvent Naphtha                               | None listed | MKIL04427-28          |
| Getty Oil Company | Gettysolve Special H                 | Textile Spirits                                      | None listed | MKIL04422-24          |
| Getty Oil Company | Gettysolve H                         | Light Rubber Solvent<br>Naphtha                      | None listed | MKIL04417-19          |
| Getty Oil Company | Getty Toluene                        | Methyl Benzene;<br>Toluene (Nitration)               | None listed | MKIL004412-14         |
| Getty Oil Company | Gettysolve V                         | Varnish Makers &<br>Painter's Naphtha                | None listed | MKIL04408-09          |
| Getty Oil Company | Skellite                             | Stove & Lantern Fuel                                 | None listed | MKIL04406-07          |
| Getty Oil Company | Gettysolve S-1                       | High Flash Mineral<br>Spirits                        | None listed | MKIL04398-99          |
| Getty Oil Company | Gettysolve S-2                       | Quick Dry Mineral Spirits                            | None listed | MKIL04393-94          |
| Getty Oil Company | Gettysolve B                         | Commercial Hexane                                    | None listed | MKIL04388-89          |
| Getty Oil Company | Gettysolve C                         | Commerical Heptane                                   | None listed | MKIL04383-84          |

|                              |                            |  |             |                     |
|------------------------------|----------------------------|--|-------------|---------------------|
| Getty Oil Company            | Gettysolve S & S-66        | Mineral Spirits  | None listed | MKIL04379-80        |
| Grain Processing Corporation | GPC Anhydrous Fuel Alcohol |  | 3/23/1984   | MKIL04368-69        |
| Harshaw/Filtrol              | Potassium Fluoborate       | Potassium Fluoborate   | 6/28/1984   | MKIL05062-63        |
| ICI Americas Inc.            | Glycol Ether EM            | Ethylene glycol monomethyl ether, EM, 2-Methoxyethanol               | Jan-83      | MKIL02521-24        |
| ICI Americas Inc.            | Glycol Ether Acetate       | EEA, ethylene glycol monomethyl ether acetate, 2-ethoxyethyl acetate | Jan-83      | MKIL02529-32        |
| ICI Americas Inc.            | Glycol Ether EE            | Monoethylene glycol monomethyl ether, II, 2-ethoxyethanol            | Jan-83      | MKIL02525-28        |
| Kalama Chemical, Inc.        | K Flex DP                  | Dipropylene Glycol Dibenzoate  | Apr-81      | MKIL05943-44        |
| Kalama Chemical, Inc.        | K Flex 500                 | Glycol Dibenzoate & Diethylene Glycol Dibenzoate                     | Apr-81      | MKIL05941-42        |
| McKesson Chemical Co.        | Caustic Soda               | Sodium Hydroxide   | 2/14/1986   | MKIL174405, 407-410 |
| McKesson Chemical Co.        | Chelaclean 103B            |  | Mar-84      | MKIL05738-40        |
| McKesson Chemical Co.        | Swiss Blend #1             |  | Dec-83      | MKIL05683-85        |
| McKesson Chemical Co.        | Getty Blend                | Triethylene Glycol, water  | Aug-84      | MKIL05628-30        |
| McKesson Chemical Co.        | Hydrogen Peroxide          |  | 2/14/1986   | MKIL193105-09       |
| McKesson Chemical Co.        | Glycol Ether EE            | Ethylene glycol  | 9/11/1986   | MKIL183281-85       |
| McKesson Chemical Co.        | Chloroform                 | Trichloromethane   | 2/14/1986   | MKIL192600-03       |
| McKesson Chemical Co.        | Formaldehyde Solution LM   | Formaldehyde, Methylene Oxide, Formalin, Methylene Glycol            | 2/14/1986   | MKIL193099-103      |

|                           |  |   |             |               |
|---------------------------|--|---|-------------|---------------|
| McKesson Chemical Co.     | Methylene Chloride Mixture   | Methylene Chloride, Methanol, Esters and Aromatics              | 2/18/1986   | MKIL192650-55 |
| McKesson Chemical Co.     | Methylene Chloride   | Methylene Chloride  | 2/14/1986   | MKIL192690-93 |
| McKesson Chemical Co.     | Aerochem Blend   | Methyl Ethyl Ketone and Toluene                                 | 1/1/1985    | MKIL05618-20  |
| McKesson Chemical Co.     | AP-82  | Methylene Chloride, Methanol                                    | Oct-82      | MKIL192656-59 |
| McKesson Chemical Co.     | McKSolve ® 43  | Glycerin, Ethylene Glycol                                       | Apr-85      | MKIL05609-11  |
| McKesson Chemical Co.     | MBL SS-11 Blend  | 1,1,1-Trichloroethane, Kerosene 450, Perchloroethylene, Toluene | Jan-84      | MKIL05703-04  |
| Mobay                     | Preventol BP Technical Flakes  |   | None listed | MKIL01956-57  |
| Mobay                     | 49-135, Germicide, ortho-2-Benzyl-4-Chlorophenol Benzylpara-chlorophenol |   | 6/29/1983   | MKIL01953-55  |
| Monsanto                  | NTA  | Nitrilotriacetic Acid, Trisodium Salt, Monohydrate              | Oct-82      | MKIL02035-38  |
| Occidental Chemical Corp. | Thionyl Chloride   | Thionyl Chloride  | Apr-86      | MKIL05230-33  |
| PPG Industries, Inc.      | Tri-Ethane   | 1,1,1-trichloroethane, methylchloroform                         |             | MKIL192632-33 |
| Rohm and Haas Co.         | Acrysol LMW-45 Polymer Solution  | Polyacrylic acid, water   | 5/17/1985   | MKIL05050-51  |
| Rohm and Haas Co.         | Glacial Methacrylic Acid   | Alpha-methyl acrylic acid                                       | 11/14/1985  | MKIL193122    |
| Rohm and Haas Co.         | Triton N-60 Surfactant   | Nonylphenoxypolyethoxyethanol nonionic surfactant               | 11/21/1985  | MKIL05228-29  |

|                           |  |  |             |                |
|---------------------------|--|--|-------------|----------------|
| Rohm and Haas Co.         | Triton CF-21 Surfactant                | Octylphenoxy polyethoxy polypropoxy propanol     | 3/19/1986   | MKIL05226-27   |
| Rohm and Haas Co.         | Tamol 731 25% Dispersing agent         | Sodium salt of polymeric carboxylic acid         | 3/19/1986   | MKIL05058-59   |
| Rohm and Haas Co.         | Tamol SF01 Dispersing Agent            | Acrylic polymer, ammonia, water                  | 8/12/1985   | MKIL193104     |
| Shell                     | Butyl Oxitol Glycol Ether              | 2-butoxyethanol; ethylene glycol monobutyl ether | 9/17/1984   | MKIL14949-52   |
| Shell                     | Butyl Oxitol                           | 2-Butoxyethanol, Ethylene Glycol Monobutyl Ether | 1/13/1986   | MKIL05218-21   |
| Shell                     | Shell Toluene                          | Toluene, Methyl Benzene                          | Nov-78      | MKIL06740-41   |
| Shell                     | Methyl Ethyl Ketone                    | MEK; 2-butanone                                  | 3/16/1982   | MKIL192809-12  |
| The Shepherd Chemical Co. | Cobalt sulfate                         | Cobalt sulfate, heptahydrate                     | Oct-85      | MKIL05208-09   |
| The Stanley Works         | Ferrous Sulfate                        | Ferrous Sulfate                                  | 6/21/1982   | MKIL192699-700 |
| Stauffer Chemical Co.     | Sodium Sulfite, Anhydrous              | Sodium Sulfite, Anhydrous                        | Sep-80      | MKIL05053      |
| Stauffer Chemical Co.     | Diammonium Phosphate                   | Ammonium phosphate                               | Sep-85      | MKIL05222-25   |
| Steuber Company           | Methylene Chloride                     | Dichloromethane, Methane Dichloride              | None listed | MKIL192684-85  |
| Union Carbide Corporation | Polypropylene Glycol PPG-1025          | Polyol   | Polyol      | MKIL05192-95   |
| Union Carbide Corporation | SILWET Surface Active Copolymer L-722  | Polyalkyleneoxide modified polydimethylsiloxane  | 2/18/1996   | MKIL05106-09   |
| Union Carbide Corporation | SILWET Surface Active Copolymer L-7001 | Polyalkyleneoxide modified polydimethylsiloxane  | 2/18/1986   | MKIL05111-14   |

|                           |   |   |             |                |
|---------------------------|---|---|-------------|----------------|
| Union Carbide Corporation | SILWET Surface Active Copolymer L-720           | Polyalkyleneoxide modified polydimethylsiloxane | 2/18/1986   | MKIL05168-71   |
| Union Carbide Corporation | SILWET Surface Active Copolymer L-7602          | Polyalkyleneoxide modified polydimethylsiloxane | 2/18/1986   | MKIL05101-04   |
| Union Carbide Corporation | Methyl Ethyl Ketone                             | Methyl Ethyl Ketone                             | None listed | MKIL192819-21  |
| Union Carbide Corporation | Methyl Ethyl Ketone                             | 2-Butanone                                      | 4/1/1985    | MKIL192799-801 |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/100           | Polydimethylsiloxane                            | 1/8/1986    | MKIL05094-97   |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/200           | Polydimethylsiloxane                            | 1/8/1986    | MKIL05162-65   |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/350           | Polydimethylsiloxane                            | 1/8/1986    | MKIL05263-66   |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/1000          | Polydimethylsiloxane                            | 1/20/1986   | MKIL05133-36   |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/10000         | Polydimethylsiloxane                            | 1/8/1986    | MKIL05138-41   |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/2000          | Polydimethylsiloxane                            | 1/8/1986    | MKIL05148-51   |
| Union Carbide Corporation | Union Carbide Silicone Fluid L-45/60000         | Polydimethylsiloxane                            | 1/8/1986    | MKIL05197-200  |
| Union Carbide Corporation | Union Carbide SAG-10 Silicone Antifoam Emulsion | Polydimethylsiloxane emulsion                   | 1/10/1986   | MKIL05178-80   |
| Union Carbide Corporation | Union Carbide SAG-30 Silicone Antifoam Emulsion | Polydimethylsiloxane emulsion                   | 1/10/1986   | MKIL05122-25   |
| Union Carbide Corporation | Union Carbide SAG-5693 Antifoam                 | Siloxane/polyglycol blend                       | 11/20/1985  | MKIL05127-31   |
| Union Carbide Corporation | Union Carbide Silicone Water Repellent R-20     | Sodium methylsilanolate                         | 1/2/1986    | MKIL05116-20   |

|   |                          |   |             |                   |
|---|--------------------------|---|-------------|-------------------|
| Union Carbide Corporation               | Cellosolve ® Acetate     | Ethylene Glycol Monoethyl Ether Acetate       |             | MKIL2099-99       |
| U.S. Borax Chemical Corp.               | Borax 5 mol              | Sodium Tetraborate Pentahydrate               | May-72      | MKIL06243-44      |
| U.S. Borax Chemical Corp.               | Anhydrous Borax          | Sodium Tetraborate Anhydrous                  | May-72      | MKIL06241-42      |
| U.S. Borax Chemical Corp.               | Boric Acid               | Boric Acid                                    | 2/20/1981   | MKIL06239-40      |
| Vulcan Chemicals                        | Methylene Chloride       | Dichloromethane                               | None listed | MKIL192712-13     |
| Vulcan Chemicals                        | Solvent 111              | 1,1,1-Trichloroethane; Methyl Chloroform      | Sep-82      | MKIL192708-09     |
| Vulcan Chemicals                        | Trichloroethylene        | Ethylene Trichloride                          | Sep-82      | MKIL192625-26     |
| MSDS drafted by Genium Publishing Corp. | 1,1,1-Trichloroethane    | 1,1,1-Trichloroethane                         | Aug-83      | MKIL20274         |
| MSDS drafted by Genium Publishing Corp. | Isopropyl Alcohol        | Isopropanol, 2-Propanol                       | Sep-85      | MKIL20256-57      |
| MSDS drafted by Genium Publishing Corp. | Trichlorotrifluoroethane | 1,1,2-Trichloro; 1,2,2-Trifluoroethane        | Feb-86      | MKIL20268-69      |
| MSDS drafted by Genium Publishing Corp. | Methylene Chloride       | Dichloromethane; FREON 30; Methane Dichloride | Sep-85      | MKIL20270-71+E119 |
| MSDS drafted by Genium Publishing Corp. | Sodium Hydroxide         | Caustic Soda; Soda Lye                        | Aug-85      | MKIL21045-46      |
| MSDS drafted by Genium Publishing Corp. | Toluene                  |   | Apr-86      | MKIL21049-50      |
| MSDS drafted by Genium Publishing Corp. | Nitrogen                 | Nitrogen                                      | Apr-86      | MKIL195767-68     |

|   |                              |                                      |             |                   |
|---|------------------------------|--------------------------------------|-------------|-------------------|
| MSDS drafted by Genium Publishing Corp. | Boric Acid                   |                                      | None listed | MKIL06264         |
| MSDS drafted by Genium Publishing Corp. | p-Xylene                     | 1,4-Dimethylbenzene                  | Nov-80      | MKIL21061-62      |
| MSDS drafted by Genium Publishing Corp. | n-Heptane                    | Heptane                              | Sep-81      | MKIL21013-14      |
| MSDS drafted by Genium Publishing Corp. | m-Xylene                     | 1,3-Dimehtylbenzene                  | Nov-80      | MKIL21057-58      |
| MSDS drafted by Genium Publishing Corp. | Hydrofluoric Acid, Aqueous   |                                      | May-81      | MKIL20282-83      |
| MSDS drafted by Genium Publishing Corp. | Hydrofluoric Acid, Anhydrous | Hydrogen Fluoride                    | May-81      | MKIL21063-64+E125 |
| MSDS drafted by Genium Publishing Corp. | Acetic Acid, Glacial         | Acetic Acid                          | Dec-80      | MKIL20278--79     |
| MSDS drafted by Genium Publishing Corp. | Ethylene Glycol              | Glycol; 1,2-Ethanediol               | Nov-80      | MKIL20264-65      |
| MSDS drafted by Genium Publishing Corp. | Acetone                      |                                      | Sep-85      | MKIL20996-97      |
| MSDS drafted by Genium Publishing Corp. | Methyl Ethyl Ketone          | MEK; 2-butanone; Ethyl Methyl Ketone | Mar-86      | MKIL21035-36      |
| MSDS drafted by Genium Publishing Corp. | Perchloroethylene            | Perchloroethylene                    | Aug-88      | MKIL20294-95      |
| MSDS drafted by Genium Publishing Corp. | VM&P Naphtha                 |                                      | Sep-78      | MKIL21029-30      |

|  |                                   |   |        |              |
|--|-----------------------------------|---|--------|--------------|
| MSDS drafted by Genium Publishing Corp.        | Sulfuric Acid, Concentrated       | Oil of Vitriol, Hydrogen Sulfate          | Feb-86 | MKIL20258-59 |
| MSDS drafted by Genium Publishing Corp.        | Hydrogen Chloride, Anhydrous      | Hydrogen Chloride; HCl; Hydrochloric Acid | Jun-84 | MKIL20260-61 |
| MSDS drafted by Genium Publishing Corp.        | Chrysotile Asbestos               | Asbestos                                  | Nov-79 | MKIL20262-63 |
| MSDS drafted by Genium Publishing Corp.        | Diethylene Glycol Monobutyl Ether | 2-(2-Butoxyethoxy) ethanol                | Feb-87 | MKIL20266-67 |
| MSDS drafted by Genium Publishing Corp.        | Nitric Acid                       | Nitric Acid                               | Aug-88 | MKIL20272-73 |
| MSDS drafted by Genium Publishing Corp.        | Triton X-100 Surfactant           | Octylphenoxypolyethoxy ethanol            | Jul-85 | MKIL20276-77 |
| MSDS drafted by Genium Publishing Corp.        | Potassium Hydroxide               | Potassium Hydroxide                       | Feb-84 | MKIL20284-85 |
| MSDS drafted by Genium Publishing Corp.        | 2-Butoxyethanol                   | Butyl Cellosolve                          | Sep-85 | MKIL20286-87 |
| MSDS drafted by Genium Publishing Corp.        | Propylene Glycol Monomethyl Ether | 1-Methoxy-2-Propanol                      | Nov-87 | MKIL20288-89 |
| MSDS drafted by Materials Information Services | 1,2-Dichloroethane                | Ethylene dichloride                       | Nov-78 | MKIL21004    |

# technical data

**ARCO Chemical Company**  
Division of AtlanticRichfield Company

3801 WEST CHESTER PIKE  
NEWTOWN SQUARE, PA 19073  
215/358-2000

## METHYL ETHYL KETONE

Synonyms: Butanone  
MEK

Structural Formula:  $\text{CH}_3-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-\text{CH}_2-\text{CH}_3$

Molecular Formula:  $\text{CH}_3\text{COC}_2\text{H}_5$

Formula Weight: 72.11

### Properties

|                                    | <u>Typical<br/>Analysis</u> | <u>Sales<br/>Specification</u>  | <u>ASTM<br/>Method</u> |
|------------------------------------|-----------------------------|---------------------------------|------------------------|
| Purity, wt. %                      | 99.9                        | 99.5 min.                       | *                      |
| Water, wt. %                       | 0.05                        | 0.300 max.                      | D-1364                 |
| Acidity, wt. %<br>(as Acetic Acid) | 0.001                       | 0.005 max.                      | D-1613                 |
| Color, Pt - Co.<br>(Hazen)         | 5                           | 10 max.                         | D-1209                 |
| Distillation Range, °C             | 0.6                         | 1.5° Between<br>78.5-81.0       | D-1078                 |
| Initial B.P.                       | 79.5                        | --                              |                        |
| Dry Point                          | 80.1                        |                                 |                        |
| Non-volatile Matter,<br>grams/100  | 0.001                       | 0.005 max.                      | D-1353                 |
| Residual Odor                      | Passes                      | Characteristic,<br>non-residual | D-1296                 |
| Appearance                         | Passes                      | Bright and Clear                | *                      |
| Specific Gravity @ 20/20°C         | 0.806                       | 0.805-0.807                     | *                      |
| Pounds per Gallon<br>@ 60°F        | 6.75                        | --                              | -                      |

\*ARCO Chemical Company test method

MK096148

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MKIL192791

### Flammability

|                                       |    |                                   |
|---------------------------------------|----|-----------------------------------|
| Flash Point, °F:                      | 21 | Tag Closed Cup                    |
| Flammable Limits, % by Volume in Air: |    | Lower Limit, 2<br>Upper Limit, 12 |

Chemical Abstracts Service Registry Number: 78-93-3

### Safety and Handling

Methyl ethyl ketone is EXTREMELY FLAMMABLE. Keep away from heat, sparks, and open flames. Flammable vapors can be released at normal atmospheric temperatures and pressures; when mixed in certain proportions with air, vapors can burn or be explosive in confined spaces if exposed to a source of ignition.

MEK vapors are harmful and high concentrations are irritating to the eyes and upper respiratory system upon inhalation.

Consult Material Safety Data Sheets for additional information.

### Shipping

Available in tank cars and tank trucks.

P1316

## MATERIAL SAFETY DATA SHEET

PG 1

TRITON N-101

REVISION OF: 01-06-90

## REQUESTED FOR:

51136000  
ARMOR ALL PRODUCTS  
ATTN: P.A./HAZARDOUS MAT'L MANAGER  
4030 W CHANDLER AVE

SANTA ANA

CA 92724

ORDER NO: 04166377  
PROD NO: 04166377

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR  
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

## -----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300

## -----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS &amp; ROGERS BRANCH OFFICE

## -----PRODUCT IDENTIFICATION-----

PRODUCT NAME: TRITON (R) N-101  
COMMON NAMES/SYNONYMS:  
NONYLPHENOL SURFACTANT

CAS NO.: 28412-54-4  
VWR CODE: P1316

FORMULA: UNKNOWN  
HAZARD RATING (MANUFACTURER):  
HEALTH: 3  
FIRE: 1  
REACTIVITY: 0  
SPECIAL: NONE

DATE ISSUED: 11/89  
SUPERCEDES: 08/89  
HAZARD RATING SCALE:  
0=INSIGNIFICANT 3=HIGH  
1=SLIGHT 4=EXTREME  
2=MODERATE

## -----HAZARDOUS INGREDIENTS-----

| COMPONENT              | EXPOSURE LIMITS, PPM |      |       |       | HAZARD<br>IRRITANT |
|------------------------|----------------------|------|-------|-------|--------------------|
|                        | %                    | OSHA | ACGIH | OTHER |                    |
| NONYLPHENOL ETHOXYLATE | >99                  | NONE | NONE  | NONE  |                    |

(R) TRADEMARK OF ROHM AND HAAS COMPANY

## -----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: N/A VAPOR PRESSURE, MM HG/20 DEG C: NIL  
MELTING POINT, DEG F: 40 VAPOR DENSITY (AIR=1): >1  
SPECIFIC GRAVITY (WATER=1): 1.056 WATER SOLUBILITY, %: 100  
APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE=1): <1  
CLEAR, PALE YELLOW LIQUID; MILD ODOR

## -----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING; GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

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## MATERIAL SAFETY DATA SHEET

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TRITON N-101

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IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

## -----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE  
INHALATION: NONE CURRENTLY KNOWN.

EYE CONTACT: SEVERELY IRRITATING, POSSIBLY CAUSING PERMANENT INJURY.

SKIN CONTACT: SEVERELY IRRITATING.

SWALLOWED: NONE CURRENTLY KNOWN.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

## -----TOXICITY DATA-----

ORAL: RAT LD50 &gt; 5000 MG/KG

DERMAL: RABBIT LD50 &gt; 2 G/KG

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: THIS PRODUCT IS A SEVERE EYE IRRITANT--BLOOD VESSELS DEVELOPED ON THE CORNEA.

## -----PERSONAL PROTECTION-----

VENTILATION: GENERAL ROOM VENTILATION.

RESPIRATORY PROTECTION: A RESPIRATOR IS NORMALLY NOT REQUIRED IF THIS PRODUCT IS USED WITH ADEQUATE VENTILATION.

EYE PROTECTION: CHEMICAL GOGGLES. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

## -----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: &gt;300

FLAMMABLE LIMITS IN AIR, %  
METHOD USED: YDC  
LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

## -----HAZARDOUS REACTIVITY-----

STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

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## MATERIAL SAFETY DATA SHEET

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TRITON N-101

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**CONDITIONS TO AVOID: EXCESSIVE HEAT****MATERIALS TO AVOID: STRONG OXIDIZERS OR REDUCERS.****HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS IN BLACK SMOKE.****-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----**

**ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, Wipe up and dispose of in DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL. PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOILS. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.**

**DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.**

**NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.**

**-----SPECIAL PRECAUTIONS-----**

**STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER CAREFULLY, AS NEEDED, TO RELIEVE PRESSURE. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.**

**REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.**

**OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.**

**-----FOR ADDITIONAL INFORMATION-----**

**CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.  
DURING BUSINESS HOURS, PACIFIC TIME (408) 435-8700**

**-----OTHER REGULATORY INFORMATION-----**

**THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:**

| CHEMICAL       | CAS NO. | % WT.    |
|----------------|---------|----------|
| ETHYLENE OXIDE | 75-21-8 | < 10 PPM |

**-----NOTICE-----**

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## MATERIAL SAFETY DATA SHEET

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WRITON N-101

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PROCESS.

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11/89: REVISED FORMATTING CHANGES FOR COMPUTER CONVERSION ONLY.

\*\*\*\*\* E N D O F M S D S \*\*\*\*\*

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# MATERIAL SAFETY DATA SHEET

## PARAFORMALDEHYDE FINE POWDER, 95-97%

1250 W. MOCKINGBIRD LANE / DALLAS, TX 75247 / EMERGENCY PH: 800-835-5235 / INFORMATION PHONE: 214-689-4000

ISSUED MARCH, 1986

### IDENTIFICATION

#71

PRODUCT NAME: Paraformaldehyde fine powder, 95-97%      FORMULA:  $\text{HO}(\text{CH}_2\text{O})_n\text{H}$   
CHEMICAL NAME: Paraformaldehyde      MOLECULAR WEIGHT (average): 600  
CHEMICAL FAMILY: Aldehyde polymer      CAS NUMBER: 30525-89-4  
SYNONYMS: Paraform, polyoxymethylene.      CAS NAME: Paraformaldehyde  
DEPARTMENT OF TRANSPORTATION INFORMATION  
HAZARD CLASSIFICATIONS: ORM-A      UNITED NATIONS NUMBERS: UN 2213  
SHIPPING NAMES: Paraformaldehyde      DOT EMERGENCY RESPONSE GUIDE NUMBER: 32

### PHYSICAL DATA

BOILING POINT (760 mm Hg): Does not boil. Gives off formaldehyde gas when heated.      MELTING RANGE: 120-170°C (248-338°F)  
VAPOR DENSITY (AIR = 1 @ 20°C): 1.03      VAPOR PRESSURE (20°C): <2 mm Hg  
APPEARANCE AND ODOR: White free-flowing powder      SOLUBILITY IN WATER (% by WT @ 20°C): Complete  
with strong, pungent formaldehyde odor.      PERCENT VOLATILES BY VOLUME: <10  
PARTICLE DENSITY: 1.4 g/ml

HAZARDOUS INGREDIENTS: Paraformaldehyde, 95-97%

### FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN      Upper: 73.0  
AIR, % BY VOLUME      Lower: 7.0

FLASH POINT (TEST METHOD):

TAG CLOSED CUP (ASTM D56): 158°F (70°C)

### SPECIAL HAZARD DESIGNATIONS

|               | HMIS | NFPA | KEY          |
|---------------|------|------|--------------|
| HEALTH:       | 3    | 2    | 0 - Minimal  |
| FLAMMABILITY: | 1    | 1    | 1 - Slight   |
| REACTIVITY:   | 0    | 0    | 2 - Moderate |
| PROTECTIVE    |      |      | 3 - Serious  |
| EQUIPMENT:    | SG   | --   | 4 - Severe   |

OSHA 29CFR1910.1200 EVALUATION: Hazardous

EXTINGUISHING MEDIA: Use  $\text{CO}_2$  or dry chemical for small fires, alcohol-type aqueous film-forming foam or water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus (SCBA) and complete personal protective equipment when potential for exposure to vapors or products of combustion exists. Use water spray to cool fire-exposed structures and vessels.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Do not use compressed air to transfer this material.

### REACTIVITY DATA

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Temperatures above 100°F (38°C); sparks; flame.

MATERIALS TO AVOID: Caustic soda, soda ash and other alkalis; acids; amines; oxygen, hydrogen peroxide and other strong oxidizing agents.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Carbon monoxide; formaldehyde vapor.

JS 030679

The supplier makes no warranty of any kind, express or implied, concerning the use of this product either singly or in combination with other substances. User assumes all risks incident to its use. To the best of our knowledge, the information contained herein is accurate. However, neither Celanese Corporation nor any of its subsidiaries or affiliates assume any liability whatsoever for the accuracy or completeness of the information contained herein.

MKIL05071

## HEALTH DATA

### PERMISSIBLE EXPOSURE LIMITS

OSHA STANDARD: Formaldehyde - 3 ppm, 8-hr TWA; 5 ppm, ceiling; 10 ppm, 30-min max duration peak.

ACGIH TLV(R): Formaldehyde - 1 ppm, 8-hr TWA; 2 ppm, 15-min STEL.

CELANESE: Formaldehyde - 1 ppm, 8-hr TWA; 2 ppm, 30-min TWA.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH LEVEL: Formaldehyde, 100 ppm.

### EFFECTS OF EXPOSURE/TOXICITY DATA

#### ACUTE

INGESTION (SWALLOWING): Causes severe irritation and inflammation of mouth, throat and stomach. Severe stomach pains follow, with possible loss of consciousness. Slightly toxic to animals (oral LD50, rats: 0.68 g/kg).

INHALATION (BREATHING): Highly irritating to nasal passages. Can cause inflammation of lining of nose, throat and lungs. Can cause pneumonia and abnormal accumulation of fluid in the lungs. Moderately toxic to animals (inhalation LC50, rats, 4 hrs: 1.1 mg/l).

SKIN CONTACT: Can cause moderate injury--reddening and swelling. Sensitizer (allergic reaction possible). Dust can cause drying, cracking and scaling. Repeated or prolonged contact causes hardening (tanning). Slightly toxic to animals by absorption (dermal LD50 rabbits: >2 g/kg).

EYE CONTACT: Can cause chemical burn--damage irreversible. Exposure to high vapor concentrations, or to dust, causes irritation and tearing.

#### CHRONIC

MUTAGENICITY: In vitro, formaldehyde is mutagenic (mutagenic activity detected in E. coli, Pseudomonas fluorescens, and Saccharomyces cerevisiae). In vivo, no information.

CARCINOGENICITY: Formaldehyde is carcinogenic to animals (nasal cancer, lifetime inhalation study, rats). Listed as an experimental animal carcinogen (IARC, NTP) and probable human carcinogen (IARC).

REPRODUCTION: Formaldehyde showed no evidence of reproductive effects in animal studies (mice, rats, dogs).

OTHER: Formaldehyde - no evidence of effects on liver, kidneys, nervous system or blood in 180-day studies of rats, monkeys or hamsters.

### EMERGENCY AND FIRST AID PROCEDURES

INGESTION (SWALLOWING): Induce vomiting of conscious patient immediately by giving two glasses of water and pressing finger down throat. Contact a physician immediately.

INHALATION (BREATHING): Remove patient from contaminated area. If breathing has stopped, give artificial respiration, then oxygen if needed. Contact a physician immediately.

SKIN CONTACT: Remove contaminated clothing and wash contaminated skin with large amounts of water. If irritation persists, contact a physician.

EYE CONTACT: Flush eyes with water for at least 15 minutes. Contact a physician immediately.

NOTE TO PHYSICIAN: Pulmonary edema can occur. Signs and symptoms of pulmonary edema can be delayed for several hours.

## SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Eliminate ignition sources. Avoid eye or skin contact. Place leaking containers in well-ventilated area. Neutralize with ammonium hydroxide or sodium sulfite. NOTE: This reaction is reversible. All clean-up and disposal should be carried out in accordance with federal, state and local regulations. If required, state and local authorities should be notified. Use standard clean-up procedures such as vacuuming or sweeping.

WASTE DISPOSAL METHOD: This product when spilled or disposed is a non-hazardous solid waste as defined in Resource Conservation Recovery Act regulations (40CFR261). Product must be disposed of properly under state regulations for industrial waste. Preferred method is incineration or biological treatment in federal/state approved facility.

JS 030600

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use full-face NIOSH-approved formaldehyde or acid gas cartridge or canister respirator with particulate filter within use limitations of these devices; in all other situations, use self-contained breathing apparatus (SCBA).

VENTILATION

LOCAL EXHAUST: Recommended when appropriate to control employee exposure.

MECHANICAL (GENERAL): Not recommended as the sole means of controlling employee exposure.

PROTECTIVE GLOVES: Neoprene or rubber.

EYE PROTECTION: Chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT: For operations where spills can occur, use impervious body covering and boots. A safety shower and eye bath should be available.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, well-ventilated area. Do not expose to temperatures above 38°C (100°F). Keep away from heat, sparks and flame. Keep containers closed. Use only DOT-approved containers. Provide emergency exhaust. Avoid breathing dust or vapor. When transferring follow proper grounding procedures. Avoid contact with eyes, skin and clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use. Discard contaminated leather clothing. Do not enter storage area unless adequately ventilated.

JS 030681



# MATERIAL SAFETY DATA SHEET

## FORMCEL® FORMALDEHYDE IN METHANOL SOLUTION

1250 W. MOCKINGBIRD LANE / DALLAS, TX 75247 / EMERGENCY PH: 800-835-5235 / INFORMATION PHONE: 214-689-4000

ISSUED MARCH, 1986

### IDENTIFICATION

#49

PRODUCT NAME: Formcel(R) formaldehyde in  
methanol solution  
CHEMICAL NAME: Solution of formaldehyde in methanol  
CHEMICAL FAMILIES: Aldehyde; alcohol; hemi-formal.  
SYNONYMS: None.

FORMULAS: Formaldehyde,  $\text{CH}_2\text{O}$ ; methanol,  $\text{CH}_3\text{OH}$ ;  
methoxymethanol,  $\text{CH}_3\text{OCH}_2\text{OH}$ .  
MOLECULAR WEIGHT (average): 31  
CAS NUMBERS: Formaldehyde, 50-00-0; methanol,  
67-56-1; methoxymethanol, 4461-52-3.  
CAS NAMES: Formaldehyde; methanol; methoxy-  
methanol.

### DEPARTMENT OF TRANSPORTATION INFORMATION

HAZARD CLASSIFICATIONS: Corrosive Material  
SHIPPING NAMES: Corrosive Liquid NOS (Formcel(R)  
Formaldehyde in Methanol Solution, 55%)

UNITED NATIONS NUMBERS: UN 1760  
DOT EMERGENCY RESPONSE GUIDE NUMBER: 60

### PHYSICAL DATA

BOILING POINT (760 mm Hg):  $102^\circ\text{C}$  ( $216^\circ\text{F}$ )  
SPECIFIC GRAVITY ( $\text{H}_2\text{O} = 1$  @  $20/20^\circ\text{C}$ ): 1.071  
VAPOR DENSITY (AIR = 1 @  $20^\circ\text{C}$ ): >1  
APPEARANCE AND ODOR: Clear, colorless mobile liquid;  
strong, pungent, characteristic odor.

FREEZING POINT: Below  $0^\circ\text{C}$  ( $32^\circ\text{F}$ ), solid polymer  
gradually forms.  
VAPOR PRESSURE ( $20^\circ\text{C}$ ): 79 mm Hg  
SOLUBILITY IN WATER (% by WT @  $20^\circ\text{C}$ ): Complete  
PERCENT VOLATILES BY VOLUME: 100

HAZARDOUS INGREDIENTS: Formaldehyde >50%; methanol 35%; methoxymethanol, 10%.

### FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR, % BY VOLUME  
Upper: 47.0  
Lower: 7.0

FLASH POINT (TEST METHOD):

TAG CLOSED CUP (ASTM D56):  $112^\circ\text{F}$  ( $44^\circ\text{C}$ )

### SPECIAL HAZARD DESIGNATIONS

|               | HMIS | NFPA | KEY          |
|---------------|------|------|--------------|
| HEALTH:       | 3    | 3    | 0 - Minimal  |
| FLAMMABILITY: | 2    | 2    | 1 - Slight   |
| REACTIVITY:   | 0    | 0    | 2 - Moderate |
| PROTECTIVE    |      |      | 3 - Serious  |
| EQUIPMENT:    | SC   | --   | 4 - Severe   |

OSHA 29CFR1910.1200 EVALUATION: Hazardous

EXTINGUISHING MEDIA: Use  $\text{CO}_2$  or dry chemical for small fires, alcohol-type aqueous film-forming foam or water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus (SCBA) and complete personal protective equipment when potential for exposure to vapors or products of combustion exists. Water spray can be used to reduce intensity of flames and to dilute spills to nonflammable mixture. Use water spray to cool fire-exposed structures and vessels.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapor is heavier than air and can travel considerable distance to a source of ignition and flashback.

### REACTIVITY DATA

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Heat, sparks and flame.

MATERIALS TO AVOID: Caustic soda, soda ash and other alkalis; amines; acids; oxygen, hydrogen peroxide and other strong oxidizing agents.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Carbon monoxide.

JS 030676

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#### HEALTH DATA

PERMISSIBLE EXPOSURE LIMITS - None established for mixture; components listed below.

OSHA STANDARD: Formaldehyde - 3 ppm, 8-hr TWA; 5 ppm, ceiling; 10 ppm, 30-min max duration peak. Methanol - 200 ppm, TWA. Methoxymethanol - not established.

ACGIH TLV(R): Formaldehyde - 1 ppm, 8-hr TWA; 2 ppm, 15-min STEL. Methanol - 200 ppm, 8-hr TWA; 250 ppm, 15 min STEL; potential contribution to overall exposure possible through skin absorption. Methoxymethanol - not established.

CELANESE: Formaldehyde - 1 ppm, 8-hr TWA; 2 ppm, 30-min TWA.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH LEVEL: Formaldehyde, 100 ppm; methanol, 25,000 ppm. Methoxymethanol, not established.

#### EFFECTS OF EXPOSURE/TOXICITY DATA

##### ACUTE

INGESTION (SWALLOWING): Poisonous if swallowed. Causes severe irritation and inflammation of mouth, throat and stomach. Severe stomach pains follow, with possible loss of consciousness. Causes blindness, stupor, nausea and vomiting leading to severe illness, possibly death. Moderately toxic to animals (oral LD50, rats: 0.27 g/kg).

INHALATION (BREATHING): Highly irritating to nasal passages. Can cause inflammation of lining of nose, throat and lungs. Can cause pneumonia and abnormal accumulation of fluid in the lungs. Extremely high levels produce stupor, headache, nausea, giddiness and unconsciousness. Moderately toxic to animals (inhalation LC50, rats, 4 hrs: 1.6 mg/l).

SKIN CONTACT: Can cause moderate injury--reddening and swelling. Sensitizer (allergic reaction possible). Liquid causes drying, cracking and scaling. Repeated or prolonged contact causes hardening (tanning). Moderately toxic to animals by absorption (dermal LD50, rabbits: 0.98 g/kg).

EYE CONTACT: Can cause chemical burn--damage irreversible. Vapor causes irritation, tearing and burning sensation.

##### CHRONIC

MUTAGENICITY: In vitro, formaldehyde is mutagenic (mutagenic activity detected in E. coli, Pseudomonas fluorescens, and Saccharomyces cerevisiae). Methanol shows limited evidence of mutagenicity (mouse lymphoma forward mutation assay). Methoxymethanol, no information. In vivo, no information.

CARCINOGENICITY: Formaldehyde is carcinogenic to animals (nasal cancer, lifetime inhalation study, rats). Listed as an experimental animal carcinogen (IARC, NTP) and probable human carcinogen (IARC). Methanol - no evidence of carcinogenic potential in limited animal studies in which methanol was given orally or applied to the skin. Methoxymethanol, no information.

REPRODUCTION: Formaldehyde showed no evidence of reproductive effects in animal studies (mice, rats, dogs). Methanol - reported to cause birth defects in rats exposed to very high levels of vapors (20,000 ppm). Methoxymethanol, no information.

OTHER: Formaldehyde - no evidence of effects on liver, kidneys, nervous system or blood in 180-day studies of rats, monkeys or hamsters. Methanol - no information. Methoxymethanol, no information.

#### EMERGENCY AND FIRST AID PROCEDURES

INGESTION (SWALLOWING): Induce vomiting of conscious patient immediately by giving two glasses of water and pressing finger down throat. Contact a physician immediately.

INHALATION (BREATHING): Remove patient from contaminated area. If breathing has stopped, give artificial respiration, then oxygen if needed. Contact a physician immediately.

SKIN CONTACT: Remove contaminated clothing and wash contaminated skin with large amounts of water. If irritation persists, contact a physician.

EYE CONTACT: Flush eyes with water for at least 15 minutes. Contact a physician immediately.

NOTE TO PHYSICIAN: Can cause pulmonary edema. Signs and symptoms of pulmonary edema can be delayed for several hours.

JS 030677

#### S P I L L O R L E A K P R O C E D U R E S

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Eliminate ignition sources. Avoid eye or skin contact. Place leaking containers in well-ventilated area. If fire potential exists, blanket spill with foam or use water spray to disperse vapors. Contain spill to minimize contaminated area and facilitate

CELANESE CHEMICAL COMPANY, INC. 1250 W. MOCKINGBIRD LANE / DALLAS, TEXAS 75247 / 214-689-4000

MKIL05069

salvage or disposal. To clean up spill, flush area sparingly with water or use an absorbent. Avoid runoff into storm sewers and ditches which lead to natural waterways. Neutralize with ammonium hydroxide or sodium sulfite. NOTE: This reaction is reversible. Call the National Response Center (800-424-8802) if content any component spilled is equal to or greater than reportable quantity under "Superfund" (formaldehyde - 1000 lb/day; methanol - 5000 lb/day). All clean-up and disposal should be carried out in accordance with federal, state and local regulations. If required, state and local authorities should be notified.

WASTE DISPOSAL METHOD: This product when spilled or disposed is a hazardous solid waste as defined in Resource Conservation Recovery Act regulations (40CFR261). Preferred method is incineration or biological treatment in federal/state approved facility.

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use full-face NIOSH-approved self-contained breathing apparatus (SCBA) or other air-supplying full-face respirator.

##### VENTILATION

LOCAL EXHAUST: Recommended when appropriate to control employee exposure.

MECHANICAL (GENERAL): Not recommended as the sole means of controlling employee exposure.

PROTECTIVE GLOVES: Neoprene or rubber.

EYE PROTECTION: Chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT: For operations where spills or splashing can occur, use impervious body covering and boots. A safety shower and eye bath should be available.

#### SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, well-ventilated area. Keep away from heat, sparks and flame. Keep containers closed. Use only DOT-approved containers. Use with adequate ventilation. Provide emergency exhaust. When transferring follow proper grounding procedures. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use. Discard contaminated leather clothing. Do not enter storage area unless adequately ventilated.

JS 030678

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MKIL05070

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Chevron U.S.A. Inc.

# Material Safety Data Sheet

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
(Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON Candle Wax 136

CPS 261205

## TYPICAL COMPOSITION

Refined base waxes (CAS 64742-43-4)

100%

## EXPOSURE STANDARD

The ACGIH (1985-86) TLV for paraffin wax fume is 2 mg/m<sup>3</sup> for a daily 8-hour exposure. No Federal OSHA exposure standard has been established for this material.

## PHYSIOLOGICAL & HEALTH EFFECTS

The cool solid material is not expected to cause eye irritation. Thermal burns may result from contact with hot material.

The cool solid material is not expected to cause skin irritation. Thermal burns may result from contact with hot material.

## EMERGENCY & FIRST AID PROCEDURES

### Eyes

If the hot material should splash into the eyes, flush eyes immediately with fresh water while holding the eyelids open. See a doctor.

### Skin

If the hot, melted material gets on skin, quickly cool in water. See a doctor for extensive burns. DO NOT try to peel the solidified material from the skin or use solvents or thinners to dissolve it. The use of vegetable oil or mineral oil is recommended for removal of this material from the skin.

### Inhalation

Fumes from the hot material can be unpleasant and may produce nausea and irritation of the upper respiratory tract.

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

### Ingestion

Not expected to be acutely toxic by ingestion.

Since this material is not expected to be an acute ingestion problem, no first aid procedures are required.

JS 031377

Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804-0054  
Emergency Phone Number (415) 233-3737

X-19C021 (07-85)

No. 837

Rev. 3 01/08/86

## SPECIAL PROTECTIVE INFORMATION

**Eye Protection:** Do not get hot material in eyes. Eye contact can be avoided by wearing chemical safety goggles.

**Skin Protection:** Avoid skin contact with the hot material by wearing protective clothing including gloves.

**Respiratory Protection:** Wear approved respiratory protection such as a toxic dust/mist/fume respirator or an air-supplying respirator unless ventilation is adequate to keep airborne concentrations of fumes from the molten material below the ACGIH TLV.

**Ventilation:** Use adequate ventilation to keep the airborne concentrations of this material below the ACGIH TLV.

## FIRE PROTECTION

**Flash Point:** (COC) 465°F (240°C)

**Autoignition Temp.:** NDA

**Flammability Limits:** n/a

**Extinguishing Media:** CO<sub>2</sub>, Dry Chemical, Foam.

**Special Fire Fighting Procedures:** In case of fire, smother flames and turn off heat source. DO NOT use water to extinguish wax fires as the water may boil violently causing an explosion of hot wax. Read the entire MSDS.

## SPECIAL PRECAUTIONS

**CAUTION!** A material which contains wax can catch fire if it is overheated. DO NOT heat this material above its flash point. DO NOT heat this material with open flames or open electrical coils. Acceptable heat sources are heat transfer fluids (steam, hot water, oil) or sealed electrical resistance heaters.

## ENVIRONMENTAL PROTECTION

X-1AC031 (04-85)

**Environmental Impact:** This material is not expected to present any environmental problems.

**Precautions if Material is Released or Spilled:** If liquid material is spilled, allow it to cool and solidify before proceeding with disposal methods.

**Waste Disposal Methods:** Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

## REACTIVITY DATA

**Stability (Thermal, Light, etc.):** Stable.

**Incompatibility (Materials to Avoid):** May react with strong oxidizing materials.

**Hazardous Decomposition Products:** Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## PHYSICAL PROPERTIES

**Solubility:** Soluble in hydrocarbon solvents; insoluble in water.

**Appearance (Color, Odor, etc.):** White translucent solid. Odorless and tasteless.

**Boiling Point:** n/a

**Melting Point:** 58.6-60.3°C (AMP)

**Specific Gravity:** 0.89 @ 23/4°C

**Vapor Pressure:** n/a

**Vapor Density (Air=1):** n/a

**Percent Volatile (Volume %):** n/a

**Evaporation:** n/a

**Viscosity:** 3.8 cSt @ 100°C

**Density, g/ml @ 25°C:** 0.91

n/a = Not Applicable

NDA = No Data Available

JS 031378

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

No. 837

2

MKIL05250

# Material Information Bulletin



(Approved - "Essentially Similar" to Form OSHA 20, Material Safety Data Sheet)

HEPTANES  
~~CHEVRON THINNER 225~~

CMS 210115

**DANGER!** **HARMFUL OR FATAL IF SWALLOWED**  
**EXTREMELY FLAMMABLE**  
**KEEP OUT OF REACH OF CHILDREN**

## TYPICAL COMPOSITION

|                              |        |
|------------------------------|--------|
| Paraffins (incl. naphthenes) | 94-98% |
| Aromatics                    |        |
| Toluene                      | 2-6%   |
| Benzene                      | <0.1%  |

## EXPOSURE STANDARD

The suggested Threshold Limit Value is 375 ppm (parts of vapor per million parts of air) for a daily 8-hour exposure. There is no OSHA exposure standard.

## PHYSIOLOGICAL & HEALTH EFFECTS

Expected to cause no more than minor eye irritation. Application into the eyes of rabbits produced slight membrane irritation.

Prolonged or frequently repeated contact may cause skin irritation or may cause the skin to become cracked or dry from the defatting action of this material. Application onto the skin of rabbits produced moderate erythema and edema.

Breathing the vapors at concentrations above the exposure standard can cause signs and symptoms of central nervous system depression such as headache, dizziness, loss of appetite, weakness, and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

Not expected to be acutely toxic by ingestion. See Additional Health Data.

## EMERGENCY & FIRST AID PROCEDURES

### Eyes

Wash eyes with fresh water for at least 15 minutes. If irritation continues, see a doctor.

### Skin

Wash thoroughly with soap and water following skin contact. Launder contaminated clothing.

### Inhalation

If there are signs or symptoms, as described in this bulletin, due to breathing this material, move the person to fresh air. If breathing has stopped, apply artificial respiration. Call a doctor immediately.

### Ingestion

If swallowed, DO NOT make person vomit. Call a doctor immediately.

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## ADDITIONAL HEALTH DATA

**Note to Physician:** Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

## SPECIAL PROTECTIVE INFORMATION

**Eye Protection:** Avoid contact with eyes. Eye contact can be avoided by wearing chemical safety goggles.

**Skin Protection:** Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

**Respiratory Protection:** Wear approved respiratory protection such as an organic vapor filtering cartridge or an air-supplying respirator unless ventilation equipment is adequate to keep airborne concentrations below the exposure standard.

**Ventilation:** Use adequate ventilation to keep the airborne concentrations of this material below the exposure standard.

## FIRE PROTECTION

This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches.

**Flash Point:** (TCC) 16°F  
**Autoignition Temp.:** 535°F  
**Flammability Limits:** 1.0-6.0%

**Extinguishing Media:** CO<sub>2</sub>, Dry Chemical, Foam, Water Spray.

**Special Fire Fighting Procedures:** For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire bulletin.

## SPECIAL PRECAUTIONS

See Page 3.

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

## ENVIRONMENTAL PROTECTION

**Environmental Impact:** Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.

**Precautions if Material is Released or Spilled:** Eliminate all sources of ignition in vicinity of spill or released vapor. Clean up spills as soon as possible, observing precautions in Special Protective Information and on product label. Absorb large spills with absorbent clay, diatomaceous earth or other suitable material. A fire or vapor hazard may exist since these cleanup materials will only absorb liquid; they will not absorb vapor.  
**Waste Disposal Methods:** Place all contaminated materials in disposable containers and bury in an approved dumping area.

## REACTIVITY DATA

**Stability (Thermal, Light, etc.):** Stable.

**Incompatibility (Materials to Avoid):** May react with strong oxidizing materials.

**Hazardous Decomposition Products:** Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## PHYSICAL PROPERTIES

**Solubility:** Miscible in hydrocarbons; insoluble in water.

**Appearance (Color, Odor, etc.):** Colorless liquid.

**Boiling Point:** 195-225°F

**Melting Point:** n/a

**Specific Gravity:** 0.73 @ 60/60°F

**Vapor Pressure:** 55 mm Hg @ 77°F

**Vapor Density (Air = 1):** 3.4

**Percent Volatile (Volume %):** 99+%

**Evaporation (Bu Ac = 1):** 3.15

**Viscosity:** 0.58 cSt @ 100°F

n/a = Not Applicable

NDA = No Data Available

MK00040570

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# Material Safety Data Sheet

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
(Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON Refined Wax 128

CPS 260401

## TYPICAL COMPOSITION

Refined base waxes (CAS 64742-43-4)

100%

## EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. The ACGIH (1985-86) TLV for paraffin wax fume is 2 mg/m<sup>3</sup> for a daily 8-hour exposure.

## PHYSIOLOGICAL & HEALTH EFFECTS

The cool solid material is not expected to cause eye irritation. Thermal burns may result from contact with the hot material.

The cool solid material is not expected to cause skin irritation. Thermal burns may result from contact with hot material.

Fumes from the hot material can be unpleasant and may produce nausea and irritation of the upper respiratory tract.

Not expected to be acutely toxic by ingestion.

### Eyes

## EMERGENCY & FIRST AID PROCEDURES

If the hot material should splash into the eyes, flush eyes immediately with fresh water while holding the eyelids open. See a doctor.

### Skin

If the hot, melted material gets on skin, quickly cool in water. See a doctor for extensive burns. DO NOT try to peel the solidified material from the skin or use solvents or thinners to dissolve it. The use of vegetable oil or mineral oil is recommended for removal of this material from the skin.

### Inhalation

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

### Ingestion

Since this material is not expected to be an acute ingestion problem, no first aid procedures are required.

JS 030663

Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804-0054  
Emergency Phone Number (415) 233-3737

X-IRC021 (07-85)

No. 1422

Rev. 3 11/19/85

## ADDITIONAL HEALTH DATA

This material complies with FDA Regulation 172.886, Code of Federal Regulations, Title 21.

## SPECIAL PROTECTIVE INFORMATION

**Eye Protection:** Do not get hot material in eyes. Eye contact can be avoided by wearing chemical safety goggles.

**Skin Protection:** Avoid skin contact with the hot material by wearing protective clothing including gloves.

**Respiratory Protection:** Wear approved respiratory protection such as a toxic dust/mist/fume respirator or an air-supplying respirator unless ventilation is adequate to keep airborne concentrations of fumes from the molten material below the ACGIH TLV.

**Ventilation:** Use adequate ventilation to keep the airborne concentrations of this material below the ACGIH TLV.

## FIRE PROTECTION

**Flash Point:** (COC) 428°F (220°C)

**Autoignition Temp.:** 340°C (ASTM D2155)

**Flammability Limits:** n/a

**Extinguishing Media:** CO<sub>2</sub>, Dry Chemical. Foam.

**Special Fire Fighting Procedures:** In case of fire, smother flames and turn off heat source. DO NOT use water to extinguish wax fires as the water may boil violently causing an explosion of hot wax. Read the entire MSDS.

## SPECIAL PRECAUTIONS

**CAUTION!** A material which contains wax can catch fire if it is overheated. DO NOT heat this material above its flash point. DO NOT heat this material with open flames or open electrical coils. Acceptable heat sources are heat transfer fluids (steam, hot water, oil) or sealed electrical resistance heaters.

## ENVIRONMENTAL PROTECTION

X-1RC031 (04-85)

**Environmental Impact:** This material is not expected to present any environmental problems.

**Precautions if Material is Released or Spilled:** If liquid material is spilled, allow it to cool and solidify before proceeding with disposal methods.

**Waste Disposal Methods:** Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

## REACTIVITY DATA

**Stability (Thermal, Light, etc.):** Stable  
**Incompatibility (Materials to Avoid):** May react with strong oxidizing materials.

**Hazardous Decomposition Products:** Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## PHYSICAL PROPERTIES

**Solubility:** Soluble in hydrocarbon solvents; insoluble in water.

**Appearance (Color, Odor, etc.):** White translucent solid. Odorless and tasteless.

**Boiling Point:** n/a

**Melting Point:** 53.9-55.0°C (AMP)

**Specific Gravity:** NDA

**Vapor Pressure:** n/a

**Vapor Density (Air=1):** n/a

**Percent Volatile (Volume %):** n/a

**Evaporation:** n/a

**Viscosity:** 3.0 cSt @ 100°C

**Density:** 0.90 g/ml @ 25°C

n/a = Not Applicable

NDA = No Data Available

JS 030664

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

No. 1422

2

MKIL05056

Dear Customer: This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this product. Please make sure this information is given to them. If you resell this product, this Bulletin should be given to the Buyer.

CMS 210555 X

Chevron U.S.A. Inc.

MAY 14 1981

# Material Information Bulletin

# Environmental Health

# & Toxicology



SOLVENT 140-F

|   |                      |
|---|----------------------|
| Warning Statement                                       | Name                 |
| HARMFUL OR FATAL IF SWALLOWED<br>DANGER!<br>COMBUSTIBLE | CHEVRON Thinner 410B |
|   | CMS 210555           |

## A-Typical Composition

|                              |       |
|------------------------------|-------|
| Paraffins (incl. naphthenes) | 99%   |
| Aromatics                    |       |
| C <sub>8</sub> +             | 1%    |
| Benzene                      | <0.1% |

## B-Physiological Effects and Health Information

|                   |  |
|-------------------|--|
| Exposure Standard | The suggested Threshold Limit Value is 50 ppm (parts of vapor per million parts of air) for a daily 8-hour exposure. No OSHA exposure standard has been established for this material.   |
| Eye Irritation    | This material is not expected to be a primary eye irritant. However, minor irritation may be noted following contact. (See note below.)  |
| Skin Irritation   | This material is not expected to be a primary skin irritant. However, minor irritation may be noted following prolonged or frequently repeated contact. Prolonged or frequently repeated skin contact may cause the skin to become dry or cracked from the defatting action of the material. (See note below.)   |
| Systemic Effects  | <p>This material is not expected to be toxic by ingestion or by skin contact. However, if the material is swallowed and aspirated into the lungs, chemical pneumonitis may result.</p> <p>Prolonged exposure to high vapor concentrations of this material may cause signs and symptoms of central nervous system depression such as headache, dizziness, loss of appetite, weakness, and loss of coordination. Affected persons normally experience complete recovery when removed from the exposure area.</p> <p>Note: We have no laboratory data on this material. These conclusions are derived from the results of laboratory tests on similar materials.</p> |

Note Disclaimer of Warranty, Page 4

Chevron Environmental Health Center/P.O. Box 1272, Richmond, CA 94802  
Reference Phone Number (415) 232-1514, Ext. 4957

(Approved by U.S. Department of Labor, "Essentially similar to Form OSHA 20, Material Safety Data Sheet")

EV. No. 113-6/78

MK00040551

MKIL14929

## C-Emergency and First Aid Procedures

|              |   |
|--------------|---|
| Eye Contact  | Flush eyes with fresh water for at least 15 minutes. If irritation persists get medical attention.  |
| Skin Contact | Use good personal hygiene practices while working with this material. Dry contaminated clothing before reuse.   |
| Inhalation   | If there are signs or symptoms of overexposure to vapor or mist of this material (as described in Section B — Systemic Effects), move the individual to an uncontaminated area and get medical attention. If breathing has stopped, apply artificial respiration. |
| Ingestion    | If this material is swallowed and aspirated, chemical pneumonitis may result. If swallowed, DO NOT induce vomiting; get medical attention immediately.  |

## D-Special Protection Information

|                        |  |
|------------------------|--|
| Eye Protection         | Avoid eye contact with this material. If the conditions or frequency of use increase the danger of exposure, eye contact can best be avoided by wearing chemical-safety goggles.   |
| Respiratory Protection | The vapor or mist concentration of this material must be kept below applicable standards (see Section B - Exposure Standard). If this cannot be achieved, the use of an approved respirator for organic vapor and mist, supplied-air or self-contained breathing equipment is recommended. |
| Skin Protection        | Avoid prolonged or frequently repeated skin contact with this material. If the conditions or frequency of use increase the danger of exposure, skin contact can best be avoided by wearing impervious neoprene or rubber gloves.   |
| Ventilation            | Use adequate ventilation to keep the vapor or mist concentration of this material below applicable standards (see Section B - Exposure Standard).  |
| Other                  |  |

## E-Fire Protection Information

|  |   |  |   |      |             |      |
|--|---|--|---|------|-------------|------|
| Flash Point<br>(test method)           | (TCC)140°F<br>(TOC)160°F  | Flammable Limits<br>(by volume in air) | lower limit                                       | 0.9% | upper limit | 4.9% |
| Autoignition<br>Temperature            | 490°F   | Extinguishing<br>Media                 | CO <sub>2</sub> , Dry Chemical, Foam, Water Spray |      |             |      |
| Special<br>Fire Fighting<br>Procedures | For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire bulletin. |  |   |      |             |      |

## F-Reactivity Data

|   |  |   |                        |  |
|---|--|---|------------------------|--|
| Stability<br>(thermal, light, etc.)     | Stable   | X | Conditions<br>to Avoid |  |
|   | Unstable   |   |                        |  |
| Incompatibility<br>(materials to avoid) | May react with strong oxidizing materials.   |   |                        |  |
| Hazardous Decomposition<br>Products     | Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide. |   |                        |  |
| Hazardous<br>Polymerization             | May Occur  |   | Conditions<br>to Avoid |  |
|   | Will not Occur   | X |                        |  |

## G-Environmental Protection

|   |   |
|---|---|
| Environmental<br>Impact                           | Certain geographical areas have air pollution restrictions concerning the use of aromatic solvents in work situations where the solvent would be released to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in that area where it is to be used.  |
| Precautions if Material<br>is Released or Spilled | Eliminate all open flames in vicinity of spill or released vapors. Clean up spills as soon as possible, observing precautions in Section D. Absorb large spills with absorbent clay, diatomaceous earth or other suitable material. A fire or vapor hazard may exist since these cleanup materials will only absorb liquid; they will not absorb vapor. |
| Waste Disposal<br>Methods                         | Place all contaminated materials in disposable containers and bury in an approved dumping area.   |

## H-Special Precautions

|                         |   |
|-------------------------|---|
| Handling and<br>Storing | <p>READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.</p> <p>Contains petroleum naphtha.</p> <p>Keep away from heat or open flame.<br/>KEEP OUT OF REACH OF CHILDREN.</p> |
|-------------------------|---|

MK00040553

## I-Physical Properties

|                                  |                    |  |       |  |
|----------------------------------|--------------------|--|-------|--|
| Boiling Point                    | 367-410° F         | Melting Point                              |       | Solubility   |
|                                  |                    |  |       | Miscible with hydrocarbons;<br>insoluble in water. |
| Vapor Pressure<br>(mm Hg & temp) | 1 mm Hg<br>@ 77° F | Specific Gravity<br>(H <sub>2</sub> O = 1) | 0.800 | Appearance, Color, Odor, etc.                      |
| Molecular Weight                 | 157 (Avg)          | Percent Volatile<br>by Volume (%)          | 99+%  | Colorless liquid.                                  |
| Vapor Density<br>(air = 1)       | 5.4                | Evaporation<br>( = 1)                      | 0.05  | Viscosity  |
|                                  |                    |  |       | 1.33 cSt @ 100° F                                  |
| Pour Point                       |                    | Other                                      |       |  |

The above information is based on data available to us and is believed to be correct. However, NO WARRANTY of MERCHANTABILITY, FITNESS for any use or any other warranty is expressed or to be implied regarding the accuracy of these data, the results to be obtained from the use thereof, the hazards connected with the use of the material, or that any such use will not infringe any patent. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

# Material Information Bulletin

(Approved - "Essentially Similar" to Form OSHA 20, Material Safety Data Sheet)



CHEVRON THINNER 265

VMP

CMS 210170

**DANGER! HARMFUL OR FATAL IF SWALLOWED  
FLAMMABLE  
KEEP OUT OF REACH OF CHILDREN**

## TYPICAL COMPOSITION

|                              |       |
|------------------------------|-------|
| Paraffins (incl. naphthenes) | 95%   |
| Aromatics                    |       |
| Xylene                       | 3%    |
| Toluene                      | <1%   |
| C <sub>8</sub> +             | 1%    |
| Benzene                      | <0.1% |

## EXPOSURE STANDARD

The suggested Threshold Limit Value is 225 ppm (parts of vapor per million parts of air) for a daily 8-hour exposure.

## PHYSIOLOGICAL & HEALTH DATA

Expected to cause no more than minor eye irritation.

Prolonged or frequently repeated contact may cause skin irritation or may cause the skin to become cracked or dry from the defatting action of this material.

Breathing the vapors at concentrations above the exposure standard can cause central nervous system depression. See Additional Health Data.

Not expected to be acutely toxic by ingestion. **Note to Physician:** Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis. See Additional Health Data.

## EMERGENCY & FIRST AID PROCEDURES

### Eyes

Wash eyes with fresh water for at least 15 minutes. If irritation continues, see a doctor.

### Skin

Wash thoroughly with soap and water following skin contact. Launder contaminated clothing.

### Inhalation

If there are signs or symptoms, as described in this bulletin, due to breathing this material, move the person to fresh air. If breathing has stopped, apply artificial respiration. Call a doctor immediately.

### Ingestion

If swallowed, DO NOT make person vomit. Call a doctor immediately.

MK00040559

## ADDITIONAL HEALTH DATA

See Page 3.

## SPECIAL PROTECTIVE INFORMATION

**Eye Protection:** Avoid contact with eyes. Eye contact can be avoided by wearing chemical safety goggles.

**Skin Protection:** Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

**Respiratory Protection:** Wear approved respiratory protection such as an organic vapor cartridge or an air-supplying respirator unless ventilation equipment is adequate to keep airborne concentrations below the exposure standard.

**Ventilation:** Use adequate ventilation to keep the airborne concentrations of this material below the exposure standard.

## FIRE PROTECTION

This material presents a fire hazard. Liquid quickly evaporates and forms vapors (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 15°F.

**Flash Point:** (TCC) 67°C (TOC) 80°C

**Autoignition Temp.:** 505°C

**Flammability Limits:** 1.0-6.0%

**Extinguishing Media:** CO<sub>2</sub>, Dry Chemical, Foam, Water Spray.

**Special Fire Fighting Procedures:** For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal combustion or oxygen deficiency. Read the entire bulletin.

## SPECIAL PRECAUTIONS

See Page 3.

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

## ENVIRONMENTAL PROTECTION

**Environmental Impact:** Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.

**Precautions if Material is Released or Spilled:** Eliminate all sources of ignition in vicinity of spill or released vapor. Clean up spills as soon as possible, observing precautions in Special Protective Information and on product label. Absorb large spills with absorbent clay, diatomaceous earth, or other suitable material. A fire or vapor hazard may exist since these cleanup materials will only absorb liquid; they will not absorb vapor.

**Waste Disposal Methods:** Place contaminated materials in disposable containers and bury in an approved dumping area.

## REACTIVITY DATA

**Stability (Thermal, Light, etc.):** Stable.

**Incompatibility (Materials to Avoid):** May react with strong oxidizing materials.

**Hazardous Decomposition Products:** Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## PHYSICAL PROPERTIES

**Solubility:** Miscible with hydrocarbons; insoluble in water.

**Appearance (Color, Odor, etc.):** Colorless liquid.

**Boiling Point:** 258-312°F

**Melting Point:** n/a

**Specific Gravity:** 0.75

**Vapor Pressure:** 26 mm Hg @ 77°F

**Vapor Density (Air = 1):** 4.0

**Percent Volatile (Volume %):** 99+%

**Evaporation (Bu Ac = 1):** 0.99

**Molecular Weight:** 115 (Avg.)

**Viscosity:** 0.72 cSt @ 100°C

MK00040560

n/a = Not Applicable

# Material Information Bulletin

CHEVRON Thinner 265

CMS 210170

## ADDITIONAL HEALTH DATA

Data available for a similar material indicate that this material is not expected to be acutely toxic.

Signs and symptoms of central nervous system depression may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

## SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

Contains Petroleum Naphtha.

DO NOT USE OR STORE near flame, sparks, or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or explosion may result.

MK00040561

CRR-6745(C)(10M-9-79) Printed in U.S.

# Material Information Bulletin



(Approved - "Essentially Similar" to Form OSHA 20, Material Safety Data Sheet)

RMS - STODDARD SOLVENT

CHEVRON THINNER 350B

CMS 210433

**DANGER!** HARMFUL OR FATAL IF SWALLOWED  
COMBUSTIBLE  
KEEP OUT OF REACH OF CHILDREN

## TYPICAL COMPOSITION

|                              |       |
|------------------------------|-------|
| Paraffins (incl. naphthenes) | 99%   |
| Aromatics                    |       |
| C <sub>8</sub> <sup>+</sup>  | 1%    |
| Benzene                      | <0.1% |

## EXPOSURE STANDARD

The suggested Threshold Limit Value is 125 ppm (parts of vapor per million parts of air) for a daily 8-hour exposure. No OSHA exposure standard has been established for this material.

## PHYSIOLOGICAL & HEALTH EFFECTS

Expected to cause no more than minor eye irritation.

May cause skin irritation on prolonged or frequently repeated contact. Prolonged or frequently repeated contact may cause the skin to become cracked or dry from the defatting action of the material.

Breathing the vapors at concentrations above the exposure standard can cause central nervous system depression. See Additional Health Data.

Not expected to be acutely toxic by ingestion. **Note to Physician:** Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

## EMERGENCY & FIRST AID PROCEDURES

### Eyes

Wash eyes with fresh water for at least 15 minutes. If irritation continues, see a doctor.

### Skin

Wash thoroughly with soap and water following skin contact. Launder contaminated clothing.

### Inhalation

If there are signs or symptoms, as described in this bulletin, due to breathing this material, move the person to fresh air. If breathing has stopped, apply artificial respiration. Call a doctor immediately.

### Ingestion

If swallowed, DO NOT make person vomit. Call a doctor immediately.

MK00040566

## ADDITIONAL HEALTH DATA

See Page 3.

### SPECIAL PROTECTIVE INFORMATION

**Eye Protection:** Avoid contact with eyes. Eye contact can be avoided by wearing chemical safety goggles.

**Skin Protection:** Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

**Respiratory Protection:** Wear approved respiratory protection such as an organic vapor cartridge respirator or an air-supplying respirator unless ventilation equipment is adequate to keep airborne concentrations below the exposure standard.

**Ventilation:** Use adequate ventilation to keep the airborne concentrations of this material below the exposure standard.

### FIRE PROTECTION

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85°F.

**Flash Point:** (TCC) 105°F, (TOC) 117°F

**Autoignition Temp.:** 490°F

**Flammability Limits:** 1.0-6.0%

**Extinguishing Media:** CO<sub>2</sub>, Dry Chemical, Foam, Water Spray.

**Special Fire Fighting Procedures:** For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire bulletin.

### SPECIAL PRECAUTIONS

See Page 3.

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

## ENVIRONMENTAL PROTECTION

**Environmental Impact:** Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.

**Precautions if Material is Released or Spilled:** Clean up spills as soon as possible, observing precautions in Special Protective Information and on product label. Absorb large spills with absorbent clay, diatomaceous earth, or other suitable material. A fire or vapor hazard may exist since these cleanup materials will only absorb liquid; they will not absorb vapor.

**Waste Disposal Methods:** Place contaminated materials in disposable containers and bury in an approved dumping area.

### REACTIVITY DATA

**Stability (Thermal, Light, etc.):** Stable.

**Incompatibility (Materials to Avoid):** May react with strong oxidizing materials.

**Hazardous Decomposition Products:** Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

### PHYSICAL PROPERTIES

**Solubility:** Miscible with hydrocarbons; insoluble in water.

**Appearance (Color, Odor, etc.):** Colorless liquid.

**Boiling Range:** 307-394°F

**Melting Point:** n/a

**Specific Gravity:** 0.79

**Vapor Pressure:** 5 mm Hg @ 77°F

**Vapor Density (Air = 1):** 4.8

**Percent Volatile (Volume%):** 99+%

**Evaporation (Bu Ac = 1):** 0.17

**Molecular Weight:** 140 (Avg.)

**Viscosity:** 1.046 cSt @ 100°F

n/a = Not Applicable

NDA = No Data Available

MK00040567

# Material Information Bulletin

CHEVRON Thinner 350B

CMS 210433

## ADDITIONAL HEALTH DATA

Data available for a similar material indicate that this material is not expected to be acutely toxic. Signs and symptoms of central nervous system depression may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

## SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

Contains Petroleum Naphtha.

DO NOT USE OR STORE near flame, sparks, or hot surfaces. USE ONLY IN WELL VENTILATED AREA.

Keep container closed.

DO NOT weld, drill or heat container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or explosion may result.

MK00040568

CRR-6745(C)(10M-9-79) Printed in U.S.

# Material Safety Data Sheet

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
(Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON Diesel Fuel No. 2

CPS 272102

**DANGER!**      **HARMFUL OR FATAL IF SWALLOWED**  
**PROLONGED OR REPEATED CONTACT WITH SKIN MAY BE HARMFUL**  
**MAY CAUSE SKIN IRRITATION**  
**COMBUSTIBLE**  
**KEEP OUT OF REACH OF CHILDREN**

## TYPICAL COMPOSITION

Petroleum mid-distillate (CAS 68476-34-6) 100%

## EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material.

## PHYSIOLOGICAL & HEALTH EFFECTS

Expected to cause no more than minor eye irritation.

May cause skin irritation. Application of a similar material onto the skin of rabbits produced moderate to severe skin irritation. Prolonged or repeated skin contact may be harmful. See Additional Health Data.

Prolonged breathing of high vapor concentrations can cause central nervous system effects. See Additional Health Data.

Not expected to have acute systemic toxicity by ingestion. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

## EMERGENCY & FIRST AID PROCEDURES

### Eyes

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

### Skin

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if irritation occurs. Launder contaminated clothing.

### Inhalation

If there are signs or symptoms due to breathing this material as described in this MSDS, move the person to fresh air. If any of these effects continue, see a doctor.

### Ingestion

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

# Material Safety Data Sheet

CHEVRON Diesel Fuel No. 2

CPS 272102

## ADDITIONAL HEALTH DATA

Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

This product contains a petroleum mid-distillate. Toxicology data from studies on similar hydrocarbon mid-distillates indicate that lifetime application to the skin of mice resulted in a low-level skin carcinogenicity response characterized by low tumor incidence and long latency. Other similar materials caused gene mutations in the Mouse Lymphoma Assay and in the Rat Bone Marrow Assay.

## SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

Contains Petroleum Distillate.

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or explosion may result.

WARNING! Not for use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.



MSDS NO. 2877-01  
CAS NO. -----  
DATE: 03/03/83

## MATERIAL SAFETY DATA

### PRODUCT IDENTIFICATION

|                    |                                       |
|--------------------|---------------------------------------|
| TRADEMARK:         | <b>AERODRI® 104 AF Dewatering Aid</b> |
| SYNONYMS:          | None                                  |
| CHEMICAL FAMILY:   | Anionic surfactant                    |
| MOLECULAR FORMULA: | Mixture                               |
| MOLECULAR WGT.:    | Mixture                               |

### WARNING

MAY BE HARMFUL IF INHALED  
MAY CAUSE EYE AND SKIN IRRITATION  
COMBUSTIBLE LIQUID AND VAPOR

### HAZARDOUS INGREDIENTS

| COMPONENT     | CAS. NO.    | % | TWA/CEILING | REFERENCE |
|---------------|-------------|---|-------------|-----------|
| Ethyl alcohol | 000064-17-5 | 2 | 1000ppm     | OSHA      |

### NFPA HAZARD RATING

Not Established

### HEALTH HAZARD INFORMATION

|                          |   |
|--------------------------|---|
| EFFECTS OF OVEREXPOSURE: | Prolonged or repeated contact may cause skin or eye irritation. Overexposure to vapor may cause headache, drowsiness and respiratory tract irritation.  |
| FIRST AID:               | In case of skin contact, wash affected areas of skin with soap and water. In case of eye contact, immediately irrigate with plenty of water for 15 minutes. If vapor of AERODRI 104 AF is inhaled, remove from exposure. Administer oxygen if there is difficulty in breathing. |

EMERGENCY PHONE: 201/835-3100

AMERICAN CYANAMID COMPANY, WAYNE, NEW JERSEY 07470

JS 031369

MKIL05241

**EXPOSURE  
CONTROL METHODS**

Engineering controls are not usually necessary, if good hygiene practices are strictly followed. Where concentrations are below the PEL, no respiratory protection is required. For spills or leaks, such protection may be necessary. Where exposures exceed PEL, use respirator approved by NIOSH for the material and level of exposure. See "GUIDE TO INDUSTRIAL RESPIRATORY PROTECTION" (NIOSH). Material causes eye and skin irritation on contact. A full facepiece respirator will provide eye and face protection. Wear the following as necessary to prevent skin contact; impervious gloves, work pants and long sleeve work shirt. For operations where eye or face contact can occur wear respiratory protection outlined above, (full facepiece) or chemical splash proof goggles.

JS 031370

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**FIRE AND  
EXPLOSION  
HAZARD  
INFORMATION**

|                                 |  |
|---------------------------------|--|
| FLASH POINT:<br>METHOD:         | 118 F (47.7 C)<br>Pensky-Martens   |
| FLAMMABLE LIMITS<br>(% BY VOL): | Not Available  |
| AUTOIGNITION TEMP:              | Not Available  |
| DECOMPOSITION TEMP:             | Not Available  |
| FIRE FIGHTING:                  | Use alcohol foam, carbon dioxide or dry chemical to extinguish fires. Water may be ineffective. Wear self-contained, positive pressure breathing apparatus and full firefighting protective clothing. See Exposure Control Methods for special protective clothing. Use water to keep containers cool. |

---

**REACTIVITY DATA**

|   |   |
|---|---|
| STABILITY:                              | Stable  |
| CONDITIONS TO AVOID:                    | None known  |
| POLYMERIZATION:                         | Will Not Occur  |
| CONDITIONS TO AVOID:                    | None known  |
| INCOMPATIBLE<br>MATERIALS:              | Strong oxidizing agents.  |
| HAZARDOUS<br>DECOMPOSITION<br>PRODUCTS: | Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, and/or oxides of sulfur. |

---

**PHYSICAL  
PROPERTIES**

|  |  |
|--|--|
| APPEARANCE AND<br>ODOR:                      | Colorless to pale yellow mobile liquid |
| BOILING POINT:                               | Not Available                          |
| MELTING POINT:                               | Not Applicable                         |
| VAPOR PRESSURE:                              | Not Available                          |
| SPECIFIC GRAVITY:                            | 1.04                                   |
| VAPOR DENSITY:                               | Not Available                          |
| % VOLATILE (BY VOL):                         | 62                                     |
| OCTANOL/H <sub>2</sub> O<br>PARTITION COEF.: | Not Available                          |
| pH:  | 6.0-6.5 (typical) 5-7 (range)          |
| SATURATION IN AIR<br>(BY VOL):               | Not Available                          |
| EVAPORATION RATE:                            | Not Available                          |
| SOLUBILITY IN WATER:                         | Moderate                               |

JS 031371

MKIL05243

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**SPILL OR LEAK  
PROCEDURES****STEPS TO BE TAKEN IN  
CASE MATERIAL IS  
RELEASED OR SPILLED:**

Where exposure level is not known, wear NIOSH approved positive pressure self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Exposure Control Methods, wear impervious boots. Remove sources of ignition. Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush area with water.

---

**WASTE DISPOSAL**

Disposal must be made in accordance with applicable governmental regulations.

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**SPECIAL  
PRECAUTIONS****HANDLING AND  
STORAGE/OTHER:**

Areas containing this material should have fire safe practice and electrical equipment in accordance with Electrical and Fire Protection Codes (NFPA-30) governing Class II Combustible Liquids.

JS 031372

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*Marion A. Friedman*

Marion A. Friedman, Ph.D., Director of Toxicology and Product Safety

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MKIL05244



MSDS NO. 1904-01  
CAS NO. -----  
DATE: 06/18/82

## MATERIAL SAFETY DATA

### PRODUCT IDENTIFICATION

|                    |                                  |
|--------------------|----------------------------------|
| TRADEMARK:         | <b>SUPERFLOC® 362 Flocculant</b> |
| SYNONYMS:          | None                             |
| CHEMICAL FAMILY:   | Cationic polymer                 |
| MOLECULAR FORMULA: | Mixture                          |
| MOLECULAR WGT.:    | Mixture                          |

### WARNING

SPILLS OF THIS PRODUCT ARE VERY SLIPPERY

### HAZARDOUS INGREDIENTS

| COMPONENT   | CAS. NO. | % | TWA/CEILING | REFERENCE |
|---|----------|---|-------------|-----------|
| No Permissible Exposure Limits (PEL), have been established by OSHA |          |   |             |           |

### NFPA HAZARD RATING

Not Established

### HEALTH HAZARD INFORMATION

|                          |   |
|--------------------------|---|
| EFFECTS OF OVEREXPOSURE: | Acute oral (rat) and acute dermal (rabbit) LD50 values are > 10.0 ml/kg. Minimal eye and skin irritation were produced during primary irritation studies. |
| FIRST AID:               | No specific first aid procedures are necessary for accidental exposure to this product.   |

JS 031373

EMERGENCY PHONE: 201/835-3100

AMERICAN CYANAMID COMPANY, WAYNE, NEW JERSEY 07470

MKIL05245

MSDS NO. 1904-01  
SUPERFLOC® 362 Flocculant

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**EXPOSURE  
CONTROL METHODS**

Engineering controls are not usually necessary, if good hygiene practices are strictly followed. Respiratory protection is generally not required during normal operations.

JS 031374

MKIL05246

**FIRE AND  
EXPLOSION  
HAZARD  
INFORMATION**

|                                 |   |
|---------------------------------|---|
| FLASH POINT:                    | Not Available   |
| FLAMMABLE LIMITS<br>(% BY VOL): | Not Available   |
| AUTOIGNITION TEMP:              | Not Available   |
| DECOMPOSITION TEMP:             | Not Available   |
| FIRE FIGHTING:                  | Use carbon dioxide, dry chemical, or water to extinguish fires. Wear self-contained, positive pressure breathing apparatus and full firefighting protective clothing. |

**REACTIVITY DATA**

|                                   |   |
|-----------------------------------|---|
| STABILITY:                        | Stable  |
| CONDITIONS TO AVOID:              | None known  |
| POLYMERIZATION:                   | Will Not Occur  |
| CONDITIONS TO AVOID:              | None known  |
| INCOMPATIBLE MATERIALS:           | Strong oxidizing agents: this product corrodes iron, copper and aluminum.   |
| HAZARDOUS DECOMPOSITION PRODUCTS: | Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, oxides of nitrogen and/or hydrogen chloride. |

**PHYSICAL  
PROPERTIES**

|   |  |
|---|--|
| APPEARANCE AND ODOR:                      | Colorless to pale amber liquid; no specific odor |
| BOILING POINT:                            | ~212 F; ~100 C (values for water)                |
| MELTING POINT:                            | 23 F (-5 C)                                      |
| VAPOR PRESSURE:                           | 23.8 mm Hg @ 25 C (value for water)              |
| SPECIFIC GRAVITY:                         | 1.03-1.05  |
| VAPOR DENSITY:                            | 0.74 g/L @ 25 C (value for water)                |
| % VOLATILE (BY VOL):                      | ~ 75   |
| OCTANOL/H <sub>2</sub> O PARTITION COEF.: | Not Available                                    |
| pH:                                       | 5 - 7  |
| SATURATION IN AIR (BY VOL):               | Not Available                                    |
| EVAPORATION RATE:                         | 0.33 (Butyl acetate = 1)(value for water)        |
| SOLUBILITY IN WATER:                      | Complete   |

JS 031375

MKIL05247

MSDS NO. 1904-01  
SUPERFLOC® 362 Flocculant

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**SPILL OR LEAK  
PROCEDURES****STEPS TO BE TAKEN IN  
CASE MATERIAL IS  
RELEASED OR SPILLED:**

Spills of this material are very slippery. Spilled material should be absorbed onto an inert material and scooped up. The area should be thoroughly flushed with water and scrubbed to remove residue.

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**WASTE DISPOSAL**

Disposal must be made in accordance with applicable governmental regulations.

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**SPECIAL  
PRECAUTIONS****HANDLING AND  
STORAGE/OTHER:**

None

JS 031376

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*Marvin A. Friedman*

Marvin A. Friedman, Ph.D. Director of Toxicology and Product Safety

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MKIL05248

# MATERIAL SAFETY DATA SHEET



**Diamond Shamrock**  
Chemicals Company

MSDS NUMBER: M1165

PRODUCT NAME: **METHYLENE  
CHLORIDE**

MSDS DATE: 11/11/85

24 HOUR EMERGENCY PHONE: (214) 922-2700

## I. PRODUCT IDENTIFICATION

3 HEALTH HAZARD, 1 FIRE HAZARD, & 0 REACTIVITY rating based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974)

MANUFACTURER'S NAME AND ADDRESS: Diamond Shamrock Chemicals Company,  
Chlor-Alkali Division, 351 Phelps Court, P.O. Box 152300, Irving,  
Texas 75015-2300  
CHEMICAL NAME: Dichloromethane CAS NUMBER: 75-09-2

SYNONYMS/COMMON NAMES: Dichloromethane

CHEMICAL FORMULA: CH<sub>2</sub>Cl<sub>2</sub>

DOT PROPER SHIPPING NAME: Methylene Chloride

DOT HAZARD CLASS: ORM-A

DOT I.D. NUMBER: UN1593

HAZARDOUS SUBSTANCE: NA

## II. HAZARDOUS INGREDIENTS

| MATERIAL OR COMPONENT | HAZARD DATA   | CAS NUMBER | %   |
|-----------------------|---|------------|-----|
| Methylene Chloride    | PEL = 500 ppm 8 hr. TWA<br>PEL = 1000 ppm Ceiling Value<br>PEL = 2000 ppm peak<br>(5 min. in any 2 hrs.)<br>TLV = 100 ppm 8 hr. TWA | 75-09-2    | 100 |

NIOSH recommended standard air: TWA 75ppm; peak 500ppm for 15 minutes.

(See Section V)

This product is listed in the TSCA Inventory.

## III. PHYSICAL DATA

|   |   |
|---|---|
| BOILING POINT @ 760 mm Hg: 39.8°C   | FREEZING POINT: -96.7°C                     |
| EVAPORATION RATE (BuAc=1): 0.62   | VAPOR DENSITY (Air=1): 2.93                 |
| VAPOR PRESSURE: 420 mm Hg @ 25°C  | % VOLATILES BY VOL.: 100                    |
| SPECIFIC GRAVITY (H <sub>2</sub> O=1): 1.32   | SOLUBILITY IN H <sub>2</sub> O % BY WT: 1.3 |
| APPEARANCE AND ODOR: Clear, colorless liquid with an ether-like odor at concentrations over 100 ppm |   |
| pH: NA  |   |

CAS = Chemical Abstract Service Number  
PEL = OSHA Permissible Exposure Limit  
TLV = TLV®, ACGIH Threshold Limit Value, Current

N/A = No relevant information found or not available  
NA = Not Applicable

Diamond Shamrock Chemicals Company - A subsidiary of Diamond Shamrock

This Material Safety Data Sheet was prepared in accordance with 29 CFR 1910.1200. All information, recommendations and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied is made by Diamond Shamrock Chemicals Company as to the effects of such use, the results to be obtained or the safety and toxicity of the product nor does Diamond Shamrock Chemicals Company assume any liability arising out of use by others of the product referred to herein. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

JS 031330

MKIL05210

#### IV. FIRE AND EXPLOSION DATA

FLASH POINT: None (TCC) AUTOIGNITION TEMPERATURE: 662°C (1224°F)  
FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: 25 LOWER: 14  
EXTINGUISHING MEDIA: Fires involving this product are unlikely, but should one occur, it may be controlled by carbon dioxide, dry chemicals or water spray.  
SPECIAL FIRE FIGHTING PROCEDURES: Pressure-demand, self-contained respiratory protection should be provided for fire fighters in buildings or confined areas where this product is stored. Storage containers exposed to fire should be kept cool with a water spray, in order to prevent pressure build-up.  
UNUSUAL FIRE AND EXPLOSION HAZARD: This product is nonflammable and nonexplosive under normal conditions of use. At high temperatures, this product decomposes to give off hydrochloric acid as gas plus other toxic and irritating vapors such as phosgene. If storage containers are exposed to excessive heat, over-pressurization of the containers can result.

#### V. HEALTH HAZARD INFORMATION

##### HEALTH HAZARD DATA:

Acute Oral LD50 = 2000-4000 mg/kg (Rat)  
Acute Dermal LD50 = 2700 mg/kg (Rabbit)  
Acute Inhalation LC50 = 24445 ppm (Rat)  
A 1985 NTP, 2 yr. animal inhalation study report states that there is "clear evidence of carcinogenicity" in mice and female rats. Experience in industry has shown no increased incidences of cancer of any type in the worker population.

MEDICAL LIMITATIONS: Persons with angina or heart disease should not be exposed to this product.

##### ROUTES OF EXPOSURE

INHALATION: Excessive inhalation may produce symptoms of central nervous system depression, ranging from light-headedness, nausea and vomiting to unconsciousness and death.

SKIN CONTACT: Mildly irritating to skin. Skin contact may produce a burning sensation. Prolonged or repeated contact may cause skin to become reddened, rough, and dry due to the removal of natural oils and may result in dermatitis.

SKIN ABSORPTION: This product may be absorbed through the skin, although not expected to produce toxicity through this route.

EYE CONTACT: An irritant to the eyes, causing pain, lacrimation, and general inflammation.

INGESTION: May cause irritation of the gastrointestinal tract with vomiting. If vomiting results in aspiration, chemical pneumonia could follow. Absorption through the gastrointestinal tract may produce symptoms of central nervous system depression ranging from light-headedness to unconsciousness.

##### EFFECTS OF OVEREXPOSURE

ACUTE: Excessive inhalation or ingestion may produce symptoms of central nervous system depression ranging from light-headedness, to unconsciousness and death. Exposure of the eyes and skin may produce irritation.

CHRONIC: Can cause headache, mental confusion, depression, fatigue loss of appetite, nausea, vomiting, cough, loss of sense of balance, and visual disturbances. Prolonged or repeated skin contact may cause dermatitis.

##### EMERGENCY AND FIRST AID PROCEDURES

EYES: OBJECT IS TO FLUSH MATERIAL OUT THEN SEEK MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire eye surface. Seek medical attention.

SKIN: Wash contaminated areas with plenty of soap and water. A soothing ointment may be applied to irritated skin after thorough cleansing. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. Seek medical attention.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: NEVER give anything by mouth to an unconscious person. Have conscious patient drink several glasses of water then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. Seek medical attention immediately.

NOTES TO PHYSICIAN: Overexposure to this product can produce elevated carboxyhemoglobin levels.

JS 031339

MKIL05211

## VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, this material is stable.  
INCOMPATIBILITY: Avoid contacting this product with pure oxygen, alkali metals, open flames, and electrical arcs.  
HAZARDOUS DECOMPOSITION PRODUCTS: At high temperatures, this product decomposes to give off hydrogen chloride vapor and small quantities of other toxic irritating vapors such as phosgene.  
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

## VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: Leaks should be stopped. Spills should be contained and cleaned up immediately. Large spills should be removed by using a vacuum truck. Smaller spills may be soaked up with compatible absorbent materials which should then be placed in approved containers, labeled, and stored in a safe place out of doors to await proper disposal. The spill area should then be flushed with water. All rinsate should be removed and placed in approved containers to await proper treatment or disposal. Spills on areas other than pavement, e.g., dirt or sand, may be handled by removing the affected soils and placing in approved containers. Persons performing clean-up work should wear adequate personal protective equipment and clothing.  
DISPOSAL OR STORAGE: The materials resulting from clean-up operations may be hazardous wastes and therefore, subject to specific regulations. Package, store, transport and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent properly permitted contractors. Ensure that all responsible federal, state and local agencies receive timely and proper notifications of the spill and disposal of waste.

## VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: Where engineering controls are not feasible use adequate local exhaust ventilation. Local exhaust ventilation should be used wherever mist, spray or vapor may be generated.

### SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiration protection is not required under normal use. However, use a NIOSH/MSHA approved respirator following manufacturer's recommendations where vapor, mist, or spray may be generated.

EYE: Face shield and goggles or chemical splash goggles should be worn.

GLOVES: Impervious gloves should be worn. Gloves contaminated with the product should be discarded. Polyfluorinated polyethylene has been suggested.

OTHER CLOTHING AND EQUIPMENT: Standard work clothing. Standard work shoes; discard if shoes cannot be decontaminated. Store contaminated clothing in well ventilated cabinets or closed containers. Wash contaminated clothing and dry before reuse.

### MONITORING EXPOSURE

BIOLOGICAL: Reports indicate that 33 ppm Methylene Chloride in breath during exposure is equivalent to an exposure of about 100 ppm in air. Blood analyzed for carboxyhemoglobin (COHb) may show 7 to 10% saturation following exposure to 250 and 500 ppm respectively. Amount of exertion, duration of exposure, and time sampled effect these ratios.

PERSONAL/AREA: The NIOSH P&CAM (Method) Numbers 127, 5329 are applicable.

JS 031340

MKIL05212

## IX. SPECIAL PRECAUTIONS

SIGNAL WORD: DANGER

STATEMENT OF HAZARDS:

VOLATILE SOLVENT

OVEREXPOSURE TO VAPOR CAN CAUSE LOSS OF CONSCIOUSNESS AND MAY RESULT IN DEATH

CAUSES IRRITATION OF THE EYES, SKIN, AND RESPIRATORY TRACT MAY BE FATAL IF SWALLOWED

PERSONS WITH ANGINA OR HEART DISEASE SHOULD NOT BE EXPOSED

PRECAUTIONARY STATEMENTS:

DO NOT take internally.

DO NOT get in eyes, on skin, on clothing.

Use only with adequate ventilation to maintain exposure level below TLV.

When handling, wear chemical splash goggles, protective clothing, and solvent-resistant gloves.

Wash thoroughly after handling or contact.

Never enter a pit or tank without observing safety procedures - never alone, always with a life line, and always with positive supply of fresh air.

Use a NIOSH/MSHA approved respirator following manufacturer's recommendations where dust may be generated.

Avoid contact with flames, pilot lights, hot glowing surfaces, or alkali metals to prevent decomposition resulting in toxic and irritating vapors.

Keep container tightly closed.

Store in cool, ventilated place.

See Material Safety Data Sheet (MSDS) M1165, for more detailed information.

FIRST AID:

IN CASE OF CONTACT:

For eyes:

Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire eye surface. SEEK MEDICAL ATTENTION IMMEDIATELY.

For skin:

Wash with plenty of soap and water. A soothing ointment may be applied to irritated skin after cleansing. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. SEEK MEDICAL ATTENTION IMMEDIATELY.

IF INHALED:

Get person out of contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered, if available. Seek medical attention immediately.

IF SWALLOWED:

Never give anything by mouth to an unconscious person. Have conscious person drink several glasses of water then induce vomiting by having patient tickle back of throat. Keep airway clear. SEEK MEDICAL ATTENTION IMMEDIATELY.

IN CASE OF FIRE:

Use carbon dioxide, dry chemicals, foam or water fog. Pressure-demand, self-contained breathing apparatus should be provided for fire fighters.

IN CASE OF SPILL OR LEAK:

Leaks should be stopped. Spills should be cleaned up immediately. Large spills should be contained and removed by vacuum truck. Smaller spills may be soaked up with absorbant materials, which should be placed in closed containers, labeled, and stored in a safe place out of doors to await proper disposal. Persons performing this work should wear adequate personal protective equipment and clothing.

### STORAGE AND DISPOSAL

STORAGE:

Store containers in a cool, dry, well ventilated area.

DISPOSAL:

Package, store, transport and dispose of all waste material and any contaminated equipment in accordance with all applicable federal, state, and local health and environmental regulations. Shipments of waste materials are subject to manifesting requirements per applicable regulations.

FOR INDUSTRIAL USE ONLY

JS 031341

MKIL05213

# MATERIAL SAFETY DATA SHEET



**Diamond Shamrock  
Chemicals Company**

MSDS NUMBER: M1064

PRODUCT NAME: **1,1,1-  
TRICHLOROETHANE**

MSDS DATE: OCTOBER 31, 1985

24 HOUR EMERGENCY PHONE: (214) 922-2700

## I. PRODUCT IDENTIFICATION

3 HEALTH HAZARD, 1 FIRE HAZARD, & 0 REACTIVITY rating based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974)

MANUFACTURER'S NAME AND ADDRESS: Diamond Shamrock Chemicals Company,  
Chlor-Alkali Division, 351 Phelps Court, P.O. Box 152300, Irving,  
Texas 75015-2300

CHEMICAL NAME: 1,1,1-Trichloroethane CAS NUMBER: 71-55-6

SYNONYMS/COMMON NAMES: Methyl Chloroform

CHEMICAL FORMULA:  $\text{CH}_3\text{CCl}_3$

DOT PROPER SHIPPING NAME: 1,1,1-Trichloroethane

DOT HAZARD CLASS: ORM-A

DOT I.D. NUMBER: UN2831

HAZARDOUS SUBSTANCE: NA

## II. HAZARDOUS INGREDIENTS

| MATERIAL OR COMPONENT | HAZARD DATA                                    | CAS NUMBER | %   |
|-----------------------|--|------------|-----|
| 1,1,1-Trichloroethane | PEL = 350 ppm 8hr TWA<br>TLV = 350 ppm 8hr TWA | 71-55-6    | >95 |
| Stabilizers           |  |            | <5  |
| 1,2-Butylene Oxide    | 40 ppm has been suggested                      | 106-88-7   |     |
| Diethylene Ether      | TLV = 100 ppm 8hr TWA                          | 123-91-1   |     |
| Nitro Methane         | TLV = 100 ppm 8hr TWA<br>(See Section V)       | 75-52-5    |     |

The materials in this product are listed in the TSCA Inventory.

## III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: 74.1°C VAPOR DENSITY (Air=1): 4.55  
FREEZING POINT: -36.9°C % VOLATILES BY VOL.: 100  
VAPOR PRESSURE: 125mm Hg @ 25°C EVAPORATION RATE (BuAc=1): 0.37  
SPECIFIC GRAVITY (H<sub>2</sub>O=1): 1.32 SOLUBILITY IN H<sub>2</sub>O % BY WT: 0.07  
APPEARANCE AND ODOR: Clear, colorless liquid with a chloroform-like odor  
pH: NA

## IV. FIRE AND EXPLOSION DATA

FLASH POINT: None (TCC) AUTOIGNITION TEMPERATURE: 485°C (905°F)

FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: 15.0 LOWER: 7.5

EXTINGUISHING MEDIA: Fires involving this product are unlikely, but should one occur, it may be controlled by carbon dioxide, dry chemicals or water spray.

CAS = Chemical Abstract Service Number  
PEL = OSHA Permissible Exposure Limit  
TLV = TLV®, ACGIH Threshold Limit Value, Current

N/A = No relevant information found or not available  
NA = Not Applicable

Diamond Shamrock Chemicals Company - A subsidiary of Diamond Shamrock

This Material Safety Data Sheet was prepared in accordance with 29 CFR 1910.1200. All information, recommendations and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied is made by Diamond Shamrock Chemicals Company as to the effects of such use the results to be obtained or the safety and toxicity of the product nor does Diamond Shamrock Chemicals Company assume any liability arising out of use by others of the product referred to herein. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

JS 031342

MKIL05214

#### IV. FIRE AND EXPLOSION DATA

... continued

**SPECIAL FIRE FIGHTING PROCEDURES:** Pressure-demand, self-contained respiratory protection should be provided for fire fighters in buildings or confined areas where this product is stored. Storage containers exposed to fire should be kept cool with a water spray, in order to prevent pressure build-up.

**UNUSUAL FIRE AND EXPLOSION HAZARD:** This product is nonflammable and nonexplosive under normal conditions of use. At high temperatures, this product decomposes to give off hydrochloric acid gas plus other toxic and irritating gases such as phosgene. If storage containers are exposed to excessive heat, over-pressurization of the containers can result.

#### V. HEALTH HAZARD INFORMATION

**HEALTH HAZARD DATA:** This product has been tested as a whole, in compliance with 29 CFR 1910.1200.

1,1,1-Trichloroethane:

|                  |        |                         |
|------------------|--------|-------------------------|
| Acute Oral       | LD50 = | 300 mg/kg (Rat)         |
| Acute Dermal     | LD50 = | ~15,000 mg/kg (Rabbit)  |
| Acute Inhalation | LC50 = | 18,000 ppm/3 hrs. (Rat) |
|                  |        | 14,000 ppm/7 hrs. (Rat) |

##### ROUTES OF EXPOSURE

**INHALATION:** Moderate irritant of the upper respiratory tract. Concentrations insufficient to produce unconsciousness may produce gastrointestinal upset, and may progress to serious kidney and liver damage.

**SKIN CONTACT:** Mildly irritating to skin. Skin contact may produce a burning sensation. Prolonged or repeated contact may cause skin to become reddened, rough, and dry due to the removal of natural oils, and may result in dermatitis.

**SKIN ABSORPTION:** May be absorbed through the skin, although not expected to produce toxicity through this route.

**EYE CONTACT:** Liquids or vapors are irritating to the eye causing pain, lacrimation, and general inflammation.

**INGESTION:** May cause irritation of the gastrointestinal tract with vomiting. If vomiting results in aspiration, chemical pneumonia could follow. Absorption through the gastrointestinal tract may produce symptoms of central nervous system depression, ranging from light-headedness to unconsciousness.

##### EFFECTS OF OVEREXPOSURE

**ACUTE:** Excessive inhalation or ingestion may produce symptoms of central nervous system depression ranging from light-headedness to unconsciousness and death. Exposure of the eye and skin to vapors or liquid may produce irritation.

**CHRONIC:** Can cause headache, mental confusion, depression, fatigue, loss of appetite, nausea, vomiting, cough, loss of sense of balance, and visual disturbances. Prolonged or repeated skin contact may cause dermatitis. Long term effects including carcinogenicity, teratogenicity or mutagenicity have not been demonstrated.

##### EMERGENCY AND FIRST AID PROCEDURES

**EYES:** OBJECT IS TO FLUSH MATERIAL OUT THEN SEEK MEDICAL ATTENTION. Immediately flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire eye surface. Seek medical attention.

**SKIN:** Wash contaminated areas with plenty of soap and water. A soothing ointment may be applied to irritated skin after thorough cleansing. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. Seek medical attention.

**INHALATION:** Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

**INGESTION:** NEVER give anything by mouth to an unconscious person. Have conscious patient drink several glasses of water, then induce vomiting by having patient tickle back of throat with finger. Keep airway clear. Seek medical attention immediately.

**NOTES TO PHYSICIAN:** CAUTION: Epinephrine or other stimulant may cause ventricular arrhythmia due to potentiation of endogenous epinephrine.

JS 031343

MKIL05215

## VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, this material is stable.

INCOMPATIBILITY: Avoid contacting this product with strong alkalis (such as sodium hydroxide), alkali metals, open flames, and electrical arcs. Uninhibited or lightly inhibited 1,1,1 Trichloroethane should not be used in contact with aluminum or zinc or their alloys.

HAZARDOUS DECOMPOSITION PRODUCTS: At high temperatures, this product decomposes to give off hydrogen chloride gas and small quantities of other toxic and irritating vapors such as phosgene.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

## VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: Leaks should be stopped. Spills should be contained and cleaned up immediately. Large spills should be removed by using a vacuum truck. Smaller spills may be soaked up with compatible absorbent materials which should then be placed in approved containers, labeled, and stored in a safe place out of doors to await proper disposal. The spill area should then be flushed with water. All rinsate should be removed and placed in approved containers to await proper treatment or disposal. Spills on areas other than pavement, e.g., dirt or sand, may be handled by removing the affected soils and placing in approved containers. Persons performing clean-up work should wear adequate personal protective equipment and clothing.

DISPOSAL OR STORAGE: The materials resulting from clean-up operations may be hazardous wastes and therefore, subject to specific regulations. Package, store, transport and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent properly permitted contractors. Ensure that all responsible federal, state and local agencies receive timely and proper notifications of the spill and disposal of waste.

## VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: Where engineering controls are not feasible use adequate local exhaust ventilation. Local exhaust ventilation should be used wherever mist, spray or vapor may be generated.

### SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiration protection is not required under normal use. However, use a NIOSH/MSHA approved respirator following manufacturer's recommendations where vapor, mist, or spray may be generated.

EYE: Face shield and goggles or chemical goggles should be worn.

GLOVES: Impervious gloves should be worn. Gloves contaminated with the product should be discarded. Polyfluorinated polyethylene has been suggested.

OTHER CLOTHING AND EQUIPMENT: Standard work clothing. Standard work shoes; discard shoes if cannot be decontaminated. Store contaminated clothing in well ventilated cabinets or closed containers. Wash contaminated clothing and dry before reuse. Shower and eyewash facilities should be accessible.

### MONITORING EXPOSURE

BIOLOGICAL:

Analysis of breath following exposure has been suggested.

PERSONAL/AREA:

The NIOSH P&CAM (Method) Numbers 127 and S329 are applicable.

JS 031344

MKIL05216

## IX. SPECIAL PRECAUTIONS

SIGNAL WORD: DANGER

### STATEMENT OF HAZARDS:

VOLATILE SOLVENT  
OVEREXPOSURE TO VAPOR CAN CAUSE LOSS OF CONSCIOUSNESS AND MAY  
RESULT IN DEATH  
CAUSES IRRITATION OF THE EYES, SKIN, AND RESPIRATORY TRACT  
MAY BE FATAL IF SWALLOWED

### PRECAUTIONARY STATEMENTS:

DO NOT take internally.  
DO NOT get in eyes, on skin, on clothing.  
Use only with adequate ventilation to maintain exposure level below  
acceptable TLV.  
When handling, wear chemical splash goggles, protective clothing,  
and solvent-resistant gloves.  
Wash thoroughly after handling or contact.  
Never enter a pit or tank without observing safety procedures -  
never alone, always with a life line, and always with positive  
supply of fresh air.  
Employ respiratory protection when exposure to vapors is possible.  
Avoid contact with flames, pilot lights, hot glowing surfaces, or  
alkali metals to prevent decomposition resulting in toxic and  
irritating vapors.  
Keep container tightly closed.  
Store in cool, ventilated place.

### FIRST AID:

#### IN CASE OF CONTACT:

For eyes: Immediately flush with plenty of water for at least 15  
minutes, holding eyelids apart to ensure flushing of the entire  
eye surface. SEEK MEDICAL ATTENTION IMMEDIATELY.

For skin: Wash with plenty of soap and water. A soothing  
ointment may be applied to irritated skin after cleansing.  
Remove contaminated clothing and footwear and wash clothing  
before reuse. Discard footwear which cannot be decontaminated.  
SEEK MEDICAL ATTENTION IMMEDIATELY.

IF INHALED: Get person out of contaminated area to fresh air. If  
breathing has stopped, artificial respiration should be started.  
Oxygen may be administered, if available. SEEK MEDICAL ATTENTION  
IMMEDIATELY.

IF SWALLOWED: Never give anything by mouth to an unconscious  
person. Have conscious person drink several glasses of water  
then induce vomiting by having patient tickle back of throat.  
Keep airway clear. SEEK MEDICAL ATTENTION IMMEDIATELY.

IN CASE OF FIRE: Use carbon dioxide, dry chemicals, foam or water  
fog. Pressure-demand self-contained breathing apparatus should be  
provided for fire fighters.

IN CASE OF SPILL OR LEAK: Leaks should be stopped. Spills should be  
cleaned up immediately. Large spills should be contained and  
removed by vacuum truck. Smaller spills may be soaked up with  
absorbent material which should be placed in closed containers,  
labeled, and stored in a safe place out of doors to await proper  
disposal. Persons performing this work should wear adequate  
personal protective equipment and clothing.

### STORAGE AND DISPOSAL

STORAGE: Store containers in a cool, dry, well ventilated area.

DISPOSAL: Package, store, transport and dispose of all waste  
material and any contaminated equipment in accordance with all  
applicable federal, state, and local health and environmental  
regulations. Shipments of waste materials are subject to  
manifesting requirements per applicable regulations.

FOR INDUSTRIAL USE ONLY

JS 031345

MKIL05217

# MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 30478

Page: 1

PRODUCT NAME: ETHYLENE GLYCOL (REGULAR)

Effective Date: 02/06/86 Date Printed: 03/14/86

MSDS:000597

## 1. INGREDIENTS:

Ethylene glycol

CAS# 000107-21-1 >99%

Substances listed in the Ingredients Section are those identified as being present at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens cited in OSHA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200(l).

## 2. PHYSICAL DATA:

BOILING POINT: 387.1F 197C  
VAP PRESS: 0.12 mmHg @ 25C  
VAP DENSITY: 2.14  
SOL. IN WATER: Completely miscible.  
SP. GRAVITY: 1.1155 @ 20/20C  
APPEARANCE: Colorless liquid.  
ODOR: Practically odorless.

## 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 247F, 119C  
METHOD USED: Setflash

FLAMMABLE LIMITS  
LFL: 3.2%  
UFL: Not determined.

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO2, and dry chemical.

FIRE & EXPLOSION HAZARDS: Information not available.

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company

JS 031379

MKIL05251

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 30478

Page: 2

PRODUCT NAME: ETHYLENE GLYCOL (REGULAR)

Effective Date: 02/06/86 Date Printed: 03/14/86

MSDS:000597

## 3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus.

## 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Will ignite in air at 775F. (413C).

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning produces normal products of combustion, such as carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

## 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Avoid entry into sewers or natural waters. Small spills: Soak up with absorbent material. Large spills: Dike and pump into suitable containers for disposal.

DISPOSAL METHOD: Burn in an approved incinerator in accordance with all local, state, and federal requirements, or salvage.

## 6. HEALTH HAZARD DATA:

EYE: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely. Vapors or mists may irritate eyes.

SKIN CONTACT: Essentially nonirritating to skin.

SKIN ABSORPTION: Repeated skin exposure to large quantities may result in absorption of harmful amounts. The dermal LD50 has not been determined.

(Continued on Page 3)

(R) Indicates a trademark of The Dow Chemical Company

JS 031380

MKIL05252

# MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 30478

Page: 3

PRODUCT NAME: ETHYLENE GLYCOL (REGULAR)

Effective Date: 02/06/86 Date Printed: 03/14/86

MSDS:000597

## 6. HEALTH HAZARD DATA: (CONTINUED)

INGESTION: The oral LD50 for rats is in the 6,000-13,000 mg/kg. range. Amounts ingested incidental to industrial handling are not likely to cause injury; however ingestion of larger amounts could cause serious injury, even death. Single dose oral toxicity is moderate to humans even though tests with animals show a lower degree of toxicity.

INHALATION: At room temperature, exposures to vapors are unlikely due to physical properties; higher temperatures may generate vapor levels sufficient to cause adverse effects.

SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause central nervous system, kidney, blood, and possibly liver effects. Excessive exposure may cause irritation to upper respiratory tract. Observations in animals include deposition of calcium salts in various tissues after long-term dietary intake of ethylene glycol. Did not cause cancer in long-term animal studies. Has been reported to cause birth defects in rats and mice given high oral doses which were toxic to the mothers. Birth defects were also reported in mice at a high oral dose which was apparently nontoxic to the mother. Exposure of rats and mice to high aerosol concentrations resulted in teratogenic effects in mice but not in rats. Much of the total dose of ethylene glycol in the aerosol studies probably resulted from ingestion of material deposited on fur. In studies on rats, has been shown not to interfere with reproduction. In studies on mice, ingestion of ethylene glycol in large amounts caused a small decrease in the number of litters per pair, live pups per litter, and in live pup weight. Results of in vitro ('test tube') mutagenicity tests have been negative. Results of mutagenicity tests in animals have been negative.

(Continued on Page 4)

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JS 031381

MKIL05253

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 30478

Page: 4

PRODUCT NAME: ETHYLENE GLYCOL (REGULAR)

Effective Date: 02/06/86 Date Printed: 03/14/86

MSDS:000597

## 7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Call a physician. (Never give anything by mouth or attempt to induce vomiting in an unconscious person)

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Early administration of ethanol may counter the toxic effects of ethylene glycol. Hemodialysis or peritoneal dialysis have been of benefit. New Eng. J. Med. 304:21 1981.

## 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV is 50 ppm ceiling (125 mg/m<sup>3</sup>) for ethylene glycol.

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use safety glasses. If vapor exposure causes eye irritation, use a full-face respirator.

(Continued on Page 5)

(R) indicates a trademark of The Dow Chemical Company

JS 031382

MKIL05254

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 30478

Page: 5

PRODUCT NAME: ETHYLENE GLYCOL (REGULAR)

Effective Date: 02/06/86   Date Printed: 03/14/86

MSDS:000597

## 9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid ingestion. Practice reasonable caution and personal cleanliness. Avoid skin and eye contact.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zone of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29)

MSDS STATUS: Revised 1 - 9.

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For Further Information.

JS 030814

MKIL05206

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 24500

Page: 1

PRODUCT NAME: DOWICIDE (R) A ANTIMICROBIAL

Effective Date: 07/31/85 Date Printed: 03/13/86

MSDS:000137

## 1. INGREDIENTS:

Sodium o-phenylphenate tetrahydrate

(minimum)

CAS# 006152-33-6 97%

Sodium hydroxide

CAS# 001310-73-2 1-2%

Substances listed in the Ingredients Section are those identified as being present at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens cited in OSHA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200(i).

## 2. PHYSICAL DATA:

BOILING POINT: Decomposes

VAP PRESS: (mmHg @ 20C) low

VAP DENSITY: Not applic.

SOL. IN WATER: 120g/100g @ 25C

SP. GRAVITY: 1.3 @ 25/25C

APPEARANCE: White to buff solid.

ODOR: Not available.

## 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: Not appl.

METHOD USED: Not appl.

FLAMMABLE LIMITS

LFL: Not appl.

UFL: Not appl.

EXTINGUISHING MEDIA: Water fog, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Not available.

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company

JS 030815

MKIL05207

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 24500

Page: 2

PRODUCT NAME: DOWICIDE (R) A ANTIMICROBIAL

Effective Date: 07/31/85 Date Printed: 03/13/86

MSDS:000137

## 3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear protective clothing and positive-pressure self-contained breathing apparatus.

## 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) No known conditions to avoid.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: Will not occur.

## 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Clean up all traces. Shovel as much as possible into clean, dry containers. On hard surfaces use absorbent material to pick up remainder; on loose surfaces shovel up contaminated layer. Avoid use of water as product is highly toxic to aquatic life.

DISPOSAL METHOD: Keep material in closed containers. Disposal should be in compliance with local, state, and federal procedures under the Resource Conservation and Recovery Act. May call supplier for advice.

## 6. HEALTH HAZARD DATA:

EYE: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns. May cause depigmentation (white patches on skin).

SKIN ABSORPTION: A single prolonged exposure is not likely to

(Continued on Page 3)

(R) Indicates a trademark of The Dow Chemical Company

JS 031383

MKIL05255

# MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 24500

Page: 3

PRODUCT NAME: DOWICIDE (R) A ANTIMICROBIAL

Effective Date: 07/31/85 Date Printed: 03/13/86

MSDS:000137

## 6. HEALTH HAZARD DATA: (CONTINUED)

result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. The oral LD50 for male rats is 924 mg/kg and for female rats is 731 mg/kg. Ingestion may cause burns of mouth and throat.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposures to high amounts may cause kidney and/or bladder effects. Sodium o-phenylphenol has been shown to cause bladder tumors when fed at exaggerated doses to rats. However, risks from environmental exposures are considered negligible. Birth defects are unlikely. Even exposures having an adverse effect on the mother should have no effect on the fetus. Results of in vitro ("test tube") mutagenicity tests have been negative.

## 7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagosopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

JS 031384

(Continued on Page 4)

MKIL05256

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 24500

Page: 4

PRODUCT NAME: DOWICIDE (R) A ANTIMICROBIAL

Effective Date: 07/31/85   Date Printed: 03/13/86

MSDS:000137

## 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): None established.

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: In dusty atmospheres, use an approved dust respirator. Selection of air-purifying or supplied-air will depend on the specific operation and the potential airborne concentration of the material.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Contaminated leather items, such as shoes, belts and watchbands, should be removed and destroyed.

EYE PROTECTION: Use chemical goggles. Wear full-face respirator to prevent contact with dust. Eye wash fountain should be located in immediate work area.

## 9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Product should not be stored at temperatures over 120F as product may cake.

MSDS STATUS: Revised all sections.

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For Further Information.

JS 031386

MKIL05258

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 68502

Page: 1

PRODUCT NAME: POLYGLYCOL E-1000

Effective Date: 03/12/86 Date Printed: 04/12/86

MSDS:000937

## 1. INGREDIENTS:

Polyethylene glycol

CAS# 025322-68-3 >99%

Substances listed in the Ingredients Section are those identified as being present at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens cited in OSHA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200(l).

## 2. PHYSICAL DATA:

BOILING POINT: Decomposes  
VAP PRESS: Low.  
VAP DENSITY: Not applic.  
SOL. IN WATER: >100 g/100 g  
SP. GRAVITY: 1.2 @ 25/25C  
APPEARANCE: Colorless/bland solid.  
ODOR: Information not available.

## 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 465F, 241C  
METHOD USED: PMCC

FLAMMABLE LIMITS  
LFL: Not deter.  
UFL: Not deter.

EXTINGUISHING MEDIA: Water fog, alcohol foam, dry chemical

FIRE & EXPLOSION HAZARDS: Information not available.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company

JS 030672

MKIL05064

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 68502

Page: 2

PRODUCT NAME: POLYGLYCOL E-1000

Effective Date: 03/12/86 Date Printed: 04/12/86

MSDS:000937

## 3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

breathing apparatus.

## 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Product degrades when stored at elevated temperatures in presence of air.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur.

## 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Should not be left on floor - makes it slippery. Soak up with suitable absorbent material. Scoop into drums.

DISPOSAL METHOD: Salvage or burn in an approved incinerator in accordance with all federal, state, and local requirements.

## 6. HEALTH HAZARD DATA:

EYE: May cause slight transient (temporary) eye irritation.

SKIN CONTACT: Prolonged or repeated exposure not likely to cause significant skin irritation. May cause more severe response if skin is abraded (scratched or cut).

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD50 for skin absorption in rabbits is greater than 20 grams/kg. There is some indication that prolonged or repeated exposure of damaged skin, as in burn wounds, to polyethylene glycol may result in absorption of

(Continued on Page 3)

(R) Indicates a trademark of The Dow Chemical Company

JS 030673

MKIL05065

# MATERIAL SAFETY DATA SHEET

DD FORM 101-2

7-75-53 MYB



PREPARED BY THE U.S. DEPARTMENT OF LABOR AS "essentially similar" to form OSHA-201

Information on this form is for use solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for litigation.

## Section 1 NAME & PRODUCT

MANUFACTURER'S NAME

CITY STATE ZIP CODE

EMERGENCY PHONE NO. 24 HRS.

DOW CHEMICAL U.S.A.

MIDLAND, MICHIGAN 48640

517-636-4400

DATE THIS FORM WRITTEN

PREPARED BY (Signature)

January 3, 1974

Signature

CHLOROTHENE® NU Solvent

## Section 2 INGREDIENTS

1,1,1-Trichloroethane (Minimum)

94.5350

(Not a specification value)

## Section 3 PHYSICAL DATA

|                               |                  |   |                      |
|-------------------------------|------------------|---|----------------------|
| BOILING POINT (°F)            | 165 (74°C)       | SOLUBILITY IN WATER                     | 0.07 gm/100gm @ 25°C |
| VAPOR PRESSURE (mm Hg @ 20°C) | 100              | SPECIFIC GRAVITY (H <sub>2</sub> O = 1) | 1.321 @ 25/25°C      |
| VAPOR DENSITY (air = 1)       | 4.55             | % VOLATILE BY VOLUME                    | 100 (essentially)    |
| APPEARANCE                    | Colorless liquid |   |                      |

## Section 4 FIRE AND EXPLOSION HAZARD DATA

|                             |                               |  |            |
|-----------------------------|-------------------------------|--|------------|
| FLASH POINT AND METHOD USED | None F.T.O.C., T.C.C., C.O.C. | FLAMMABLE LIMITS (vol % in air) @ 25°C | 8.0 - 10.5 |
|-----------------------------|-------------------------------|--|------------|

EXTINGUISHING MEDIA

☒ WATER FOG

☐ FOAM

☐ ALCOHOL FOAM

☐ CO<sub>2</sub>

☐ DRY CHEMICAL

SPECIAL FIRE FIGHTING PROTECTION OR EQUIPMENT AND HAZARDS

Self-contained respiratory equipment. Not considered a flammable liquid hazard under normal industrial use conditions.

## Section 5 REACTIVITY DATA

|   |                                   |  |  |
|---|-----------------------------------|--|--|
| STABILITY (NORMAL CONDITIONS)   |                                   | CONDITIONS TO AVOID  |  |
| <input checked="" type="checkbox"/> STABLE  | <input type="checkbox"/> UNSTABLE | Open flames, welding arcs, or other high temperature sources which induce thermal decomposition. |  |
| INCOMPATIBILITY   |                                   | MATERIALS TO AVOID   |  |
| <input checked="" type="checkbox"/> WATER   |                                   | <input type="checkbox"/> ACID  |  |
| <input type="checkbox"/> OTHER  |                                   | <input type="checkbox"/> BASE  |  |
|   |                                   | <input type="checkbox"/> CORROSIVE   |  |
|   |                                   | <input type="checkbox"/> OXIDIZING MATERIAL  |  |
|   |                                   | *Slow hydrolysis produces corrosive acid.  |  |
| Open flames and welding arcs can cause thermal degradation with the evolution of hydrogen chloride and very small amounts of phosgene and chlorine. |                                   |  |  |
| HAZARDOUS POLYMERIZATION  |                                   | CONDITIONS TO AVOID  |  |
| <input checked="" type="checkbox"/> WILL NOT OCCUR  |                                   |  |  |

## Section 6 SPILL OR LEAK PROCEDURES

Use proper protective equipment. Small leaks: Mop up, wipe up or soak up immediately. Remove to out of doors. Large spills: Evacuate area. Contain liquid; transfer to closed metal containers. Keep out of water supply.

Send solvent to a reclaimer. In some cases it can be transported to an area where it can be placed on the ground and allowed to evaporate safely. Refer to Chemical Safety Data Sheet SD-90, Manufacturing Chemists Association, 1825 Connecticut Avenue, Washington, D.C. 20009.

MK095934

MKIL192647

## MATERIAL SAFETY DATA SHEET (CONT.)

DOW CHEMICAL U.S.A.  
MIDLAND, MICHIGAN 48840

## Section 7 HEALTH HAZARD DATA

## INGESTION

Very low toxicity. LD<sub>50</sub> (laboratory animals) ranges from 8.6 to 14.0 g/kg. Based on these data it is estimated that the lethal dose for a 150 pound person is estimated between  $\frac{1}{2}$  to one pint.

## EYE CONTACT

Mild irritation, but essentially no corneal injury.

## SKIN CONTACT

Short contact - no irritation. Prolonged or frequent exposure - minor irritations. If confined to the skin - up to moderate irritation even a burn.

## SKIN ABSORPTION

Very low. LD<sub>50</sub> (rabbits) - 24 hour exposure - greater than 1.5 g/kg.

## INHALATION

TLV 350 ppm (1972)

## EFFECT OF OVEREXPOSURE

Anesthetic effects - may occur in the range of 500 to 1000 ppm.

|                      |                          |   |  |
|----------------------|--------------------------|---|--|
| FIRST AID PROCEDURES | EYE                      | EYES AND SKIN: Flush eyes with plenty of water. For both eyes and skin get medical attention if irritation or injury develops. INHALATION: If breathing stops, give artificial respiration. Get medical help. Remove to fresh air; keep warm and quiet until recovered. INGESTION: Induce vomiting. Call a physician immediately. No specific antidote known. Treat symptomatically.* CAUTION: with some solvents, drinking alcohol shortly before, during or after exposure may cause undesirable effects. | NEVER GIVE FLUIDS OR INDUCE VOMITING IF PATIENT IS UNCONSCIOUS OR HAVING CONVULSIONS |
|                      | FLUSH WITH FLOWING WATER |   |  |

## Section 8 SPECIAL PROTECTION INFORMATION

## VENTILATION

Limit concentration in air to TLV.

RESPIRATORY PROTECTION (Specify type) Below 350 ppm - none. Respiratory protection required in the absence of environmental control. For levels up to 2% for  $\frac{1}{2}$  hour or less, a suitable full face mask with organic canister should be used. Above 2% and for emergencies, use a self-contained breathing apparatus.

## PROTECTIVE CLOTHING

No special protective clothing needed.

|                |  |   |   |   |
|----------------|--|---|---|---|
| EYE PROTECTION | <input type="checkbox"/> NOT NORMALLY NECESSARY          | <input checked="" type="checkbox"/> SAFETY GLASSES WITHOUT SIDE SHIELDS | <input type="checkbox"/> SAFETY GLASSES WITH SIDE SHIELDS | <input type="checkbox"/> CHEMICAL WORKERS GOGGLES |
|                | <input type="checkbox"/> GAS TIGHT GOGGLES OR EQUIVALENT | OTHER Eye wash stations and safety showers should be readily available. |   |   |

## Section 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Handle with reasonable care. Avoid breathing vapors. Store in a cool dry place.

\*NOTE TO PHYSICIAN: Overexposure to many of the chlorinated solvents especially if accompanied by anoxia, may temporarily increase cardiac irritability. Maintain adequate oxygenation until recovery. Avoid sympatomimetic amines, such as epinephrine, which may precipitate arrhythmias.

MK095935

(The information herein is given in good faith, but no warranty, expressed or implied, is made)

MKIL192648

M A T E R I A L   S A F E T Y   D A T A   S H E E T   P A G E : 1  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 27 JAN 82

PRODUCT CODE: 55590

PRODUCT NAME: METHYLENE CHLORIDE, TECH 744

MSD: 0009

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : X :

METHYLENE CHLORIDE, ESSENTIALLY : 100 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 104F (39.8C) : SOL. IN WATER: 2.0G/100G @ 25C  
VAP PRESS: 340 MMHG @ 20C : SP. GRAVITY: 1.320 @ 25/25C  
VAP DENSITY (AIR=1): 2.93 : % VOLATILE BY VOL: 100 (ESSENT.)

APPEARANCE AND ODOR: COLORLESS LIQUID

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS  
METHOD USED: TOC, YCC, COC : LFL: 14.8% @ 25C UFL: 22% @ 25C

EXTINGUISHING MEDIA: WATER FOG.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: PRESSURE DEMAND SELF-  
CONTAINED RESPIRATORY EQUIPMENT. FORMS FLAMMABLE VAPOR-AIR  
MIXTURES AT TEMPERATURES ABOVE AMBIENT. LOWER TEMPERATURES  
INCREASE THE DIFFICULTY OF GETTING IT TO IGNITE.

SECTION 3

REACTIVITY DATA

STABILITY: HYDROLYSIS PRODUCING SMALL AMOUNTS OF HYDROCHLORIC ACID  
POSSIBLE WITH GROSS WATER CONTAMINATION.

INCOMPATIBILITY: ALUMINUM, POSSIBLY SODIUM, POTASSIUM, AND MAGNESIUM.

HAZARDOUS DECOMPOSITION PRODUCTS: OPEN FLAMES AND WELDING ARCS CAN CAUSE  
THERMAL DEGRADATION WITH THE EVOLUTION OF HYDROGEN CHLORIDE AND VERY  
SMALL AMOUNTS OF PHOSGENE AND CHLORINE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL SPILLS:  
MOP UP, WIPE UP OR SOAK UP IMMEDIATELY. REMOVE TO OUT OF DOORS.  
LARGE SPILLS: EVACUATE AREA. CONTAIN LIQUID; TRANSFER TO CLOSED

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

MK096067

EFFECTIVE DATE: 27 JAN 82  
PRODUCT (CONT'D): METHYLENE CHLORIDE, TECH.

PRODUCT CODE: 55590  
MSD: 0009

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): (CONTINUED)  
METAL CONTAINERS. KEEP OUT OF WATER SUPPLY.

DISPOSAL METHOD: (IN ORDER OF PREFERENCE) SEND SOLVENT TO LICENSED RECLAIMER.  
INCINERATION, EVAPORATION OF VERY SMALL QUANTITIES, OR APPROVED  
LANDFILL BURIAL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.  
DUMPING INTO SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER IS STRONGLY  
DISCOURAGED, AND MAY BE ILLEGAL.

SECTION 5            HEALTH HAZARD DATA

INGESTION: LOW SINGLE DOSE ORAL TOXICITY. LD50 MALE RATS 2524 MG/KG.

EYE CONTACT: CAUSES PAIN AND MODERATE IRRITATION, AND POSSIBLE TRANSIENT  
CORNEAL INJURY.

SKIN CONTACT: SHORT CONTACT - NO IRRITATION. PROLONGED OR FREQUENTLY  
REPEATED CONTACT - MODERATE IRRITATION. IF CONFINED TO SKIN - MAY  
CAUSE A BURN.

SKIN ABSORPTION: IS ABSORBED, BUT IS LOW IN TOXICITY BY THIS ROUTE.

INHALATION: OSHA STANDARD IS 500 PPM (1975). ACGIH TLV IS 100 PPM.

EFFECTS OF OVEREXPOSURE: CARBOXYHEMOGLOBIN LEVELS MAY BE ELEVATED.  
INCREASING SIGNS OF ANESTHESIA ABOVE 900 PPM IN THE ATMOSPHERE.  
CAN CAUSE DEATH IF TOO MUCH IS BREATHED.

SECTION 6            FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IRRIGATE WITH FLOWING WATER IMMEDIATELY AND CONTINUOUSLY FOR  
15 MINUTES. REFER TO MEDICAL PERSONNEL.

SKIN: WASH OFF IN FLOWING WATER. WASH CLOTHING BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN AND/OR  
TRANSPORT TO MEDICAL FACILITY. IF RESPIRATION STOPS GIVE MOUTH-  
TO-MOUTH RESUSCITATION.

INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN AND/OR TRANSPORT  
TO EMERGENCY FACILITY.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE IRRITATION. STAIN FOR EVIDENCE OF CORNEAL  
INJURY. IF CORNEA IS BURNED, INSTILL ANTIBIOTIC STEROID PREPARATION  
FREQUENTLY. CONSULT OPTHALMOLOGIST.

(CONTINUED ON PAGE 3 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

MK096068

EFFECTIVE DATE: 27 JAN 82  
PRODUCT (CONT'D): METHYLENE CHLORIDE, TECH.

PRODUCT CODE: 55590  
MSD: 0009

SECTION 6                      FIRST AID--NOTE TO PHYSICIAN (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

SKIN: MAY CAUSE IRRITATION. CHRONIC EXPOSURE MAY CAUSE  
DEFATTING TYPE OF DERMATITIS. IF RASH IS PRESENT, TREAT AS ANY CONTACT  
DERMATITIS.

RESPIRATORY: ANESTHETIC OR NARCOTIC EFFECT MAY OCCUR. ADMINISTER  
OXYGEN IF AVAILABLE.

ORAL: MAY CAUSE CHEMICAL PNEUMONIA IF ASPIRATED INTO LUNGS. DANGER  
OF CHEMICAL PNEUMONIA MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDERING  
EMPTYING STOMACH. IF LAVAGE IS PERFORMED SUGGEST ENDOTRACHEAL AND/OR  
ESOPHAGOSCOPIC CONTROL.

SYSTEMIC: MAY CAUSE INCREASE IN CARBOXYHEMOGLOBIN LEVELS. MAY  
INCREASE MYOCARDIAL IRRITABILITY. AVOID EPINEPHRINE OR SIMILAR  
DRUGS IF AT ALL POSSIBLE. CONSULT STANDARD LITERATURE. NO SPECIFIC  
ANTIDOTE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN AND  
THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDES.

RESPIRATORY PROTECTION: APPROVED RESPIRATORY PROTECTION REQUIRED  
IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. FOR EMERGENCIES, A  
SELF-CONTAINED BREATHING APPARATUS OR A FULL-FACE RESPIRATOR  
IS RECOMMENDED.

PROTECTIVE-CLOTHING: NO SPECIAL PROTECTIVE CLOTHING NEEDED.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS. EYE WASH STATIONS  
AND SAFETY SHOWERS SHOULD BE READILY AVAILABLE.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: EXERCISE REASONABLE  
CARE AND CAUTION. AVOID BREATHING VAPORS. STORE IN COOL PLACE.  
VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN  
LOW AREAS SUCH AS PITS, DEGREASERS, STORAGE TANKS, AND OTHER CON-  
FINED AREAS. DO NOT ENTER THESE AREAS WHERE VAPORS OF THIS PRO-  
DUCT ARE SUSPECTED UNLESS SPECIAL BREATHING APPARATUS IS USED AND  
AN OBSERVER IS PRESENT FOR ASSISTANCE. DO NOT PRESSURE PRODUCT  
OUT OF VESSEL OR TRANSPORT CONTAINER WITH AIR.

ADDITIONAL INFORMATION: 27 JAN 82 REVISED FROM 22 SEP 81 --  
SECTIONS 3, 5 AND 6.

(CONTINUED ON PAGE 4 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

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MKIL192718

M A T E R I A L   S A F E T Y   D A T A   S H E E T   P A G E : 4  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 27 JAN 82

PRODUCT CODE: 55590

PRODUCT (CONT'D): METHYLENE CHLORIDE, TECH.

MSD: 0009

LAST PAGE

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,  
EXPRESSED OR IMPLIED, IS MADE.

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**U.S. DEPARTMENT OF LABOR**  
**Occupational Safety & Health Administration**  
**MATERIAL SAFETY DATA SHEET**

| SECTION I   |   |
|---|---|
| MANUFACTURER'S NAME<br>E. I. du Pont de Nemours & Co. (Inc.)                | EMERGENCY TELEPHONE NO.<br>(302) 774-7500     |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>Wilmington, DE 19898 |   |
| CHEMICAL NAME AND SYNONYMS<br>Methylene Chloride (Dichloromethane)          | TRADE NAME AND SYNONYMS<br>Methylene Chloride |
| CHEMICAL FAMILY<br>Chlorinated Hydrocarbon                                  | FORMULA<br>CH <sub>2</sub> Cl <sub>2</sub>    |

| SECTION II HAZARDOUS INGREDIENTS                      |   |                |   |   |                |
|---|---|----------------|---|---|----------------|
| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV<br>(Units) | ALLOYS AND METALLIC COATINGS              | % | TLV<br>(Units) |
| PIGMENTS  |   |                | BASE METAL                                |   |                |
| CATALYST  |   |                | ALLOYS                                    |   |                |
| VEHICLE   |   |                | METALLIC COATINGS                         |   |                |
| SOLVENTS  |   |                | FILLER METAL<br>PLUS COATING OR CORE FLUX |   |                |
| ADDITIVES   |   |                | OTHERS                                    |   |                |
| OTHERS  |   |                |   |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |                |   | % | TLV<br>(Units) |
| N.A.*   |   |                |   |   |                |
|   |   |                |   |   |                |
|   |   |                |   |   |                |
|   |   |                |   |   |                |

| SECTION III PHYSICAL DATA |   |   |                |
|---------------------------|---|---|----------------|
| BOILING POINT (°F.)       | 104   | SPECIFIC GRAVITY (H <sub>2</sub> O = 1)<br>(68°F) | 1.32           |
| VAPOR PRESSURE (mm Hg.)   | 350   | PERCENT VOLATILE<br>BY VOLUME (%)                 | 100            |
| VAPOR DENSITY (AIR = 1)   | 2.93  | EVAPORATION RATE<br>(Ether = 1)                   | Greater Than 1 |
| SOLUBILITY IN WATER       | Negligible  |   |                |
| APPEARANCE AND ODOR       | Heavy, colorless volatile liquid with a pleasant faintly ethereal odor. |   |                |

| SECTION IV FIRE AND EXPLOSION HAZARD DATA |   |                  |      |
|---|---|------------------|------|
| FLASH POINT (Method used)                 | Decomposes  | FLAMMABLE LIMITS | N.A. |
| EXTINGUISHING MEDIA                       | N.A. (will not ordinarily burn or support combustion)   |                  |      |
| SPECIAL FIRE FIGHTING PROCEDURES          | Self-contained respiratory equipment should be provided<br>for firemen fighting fires in buildings in which product is stored.  |                  |      |
| UNUSUAL FIRE AND EXPLOSION HAZARDS        | Will form explosive mixtures with oxygen under pressure.<br>Prolonged contact with metal powders (Al, Mg, etc.) may cause formation of explosive H <sub>2</sub> gas.<br>None Applicable |                  |      |

**NOTICE FROM DU PONT**  
The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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## SECTION V HEALTH HAZARD DATA - DO NOT TAKE INTERNALLY

|                                    |  |
|------------------------------------|--|
| THRESHOLD LIMIT VALUE              | (500) ppm Notice of intended change 250 ppm 1972 ACGIH   |
| EFFECTS OF OVEREXPOSURE            | Lightheadedness, mental confusion, nausea, vomiting, and headache. Continued exposure may result in staggering and loss of consciousness. High vapor may cause eye and respiratory tract irritation. Splashes in eyes or on skin may cause irritation.   |
| EMERGENCY AND FIRST AID PROCEDURES | Quickly remove person from exposure; keep warm, quiet, and get medical help. Remove contaminated clothing at once. Wash affected skin areas with water and/or warm water and soap. For eyes, wash with plenty of water for at least 15 minutes. For ingestion, call physician; induce vomiting if patient is conscious. Never give anything by mouth to an unconscious person. For inhalation, if not breathing, give artificial respiration or oxygen. In all cases call a physician. |

| SECTION VI REACTIVITY DATA   |                |   |  |
|--|----------------|---|--|
| STABILITY  | UNSTABLE       | X | CONDITIONS TO AVOID<br>Contact with flame or hot, glowing surfaces may produce toxic gases (phosgene, HCl) |
|  | STABLE         |   |  |
| INCOMPATIBILITY (Materials to avoid)<br>Oxygen under pressure; metal powders (Al, Mg, Zn, etc) |                |   |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>Phosgene, HCl, H <sub>2</sub> gas                          |                |   |  |
| HAZARDOUS POLYMERIZATION   | MAY OCCUR      |   | CONDITIONS TO AVOID  |
|  | WILL NOT OCCUR | X |  |

| SECTION VII SPILL OR LEAK PROCEDURES                      |   |
|---|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED | Avoid prolonged or repeated breathing of vapor. Avoid contact with the skin.  |
| WASTE DISPOSAL METHOD                                     | Residue may be poured on dry sand, earth, or ash at a safe distance from occupied areas and allowed to evaporate into the atmosphere. |

| SECTION VIII SPECIAL PROTECTION INFORMATION  |   |   |
|--|---|---|
| RESPIRATORY PROTECTION (Specify type)<br>None for normal use. Severe exposure: U.S. Bureau Mines respiratory equipment |   |   |
| VENTILATION  | LOCAL EXHAUST<br>Maintain adequate ventilation                                    | SPECIAL Self-contained breathing apparatus, positive pressure hose masks, airline masks |
|  | MECHANICAL (General) Intakes to exhaust system to be at or under source of vapor. |   |
| PROTECTIVE GLOVES  | Rubber  | EYE PROTECTION<br>Chemical safety goggles and/or plastic face shield                    |
| OTHER PROTECTIVE EQUIPMENT<br>Hard hats, soft brimmed hats or caps, leather or rubber safety shoes.                    |   |   |

| SECTION IX SPECIAL PRECAUTIONS   |  |
|--|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING  | Volatile solvent - keep bung tightly closed and store in cool, covered location.   |
| OTHER PRECAUTIONS  | Indoor storage tanks should have vents piped outdoors to prevent vapors escaping into work areas. Provisions should be made to prevent moist air from entering storage tanks. Rubbers and shoes should be thoroughly cleaned and ventilated after contamination. Contaminated clothing should be laundered or thoroughly dried before reuse. |
| For more information, refer to:<br>Manufacturing Chemists Association SD-86<br>Du Pont bulletins<br>Methylene Chloride Specifications (A-54646)<br>Recommended Procedures for Handling (A-58160) |  |
| Wash hands thoroughly before and at end of work.   |  |
| MK095967   |  |

A-79920

11 72

MKIL192671

# DU PONT

## MATERIAL SAFETY DATA SHEET

### IDENTIFICATION

**Name**  
Hydroxyacetic Acid - 70% Solution

**Grade**

**Synonyms** Glycolic Acid;  
Hydroxyethanoic Acid

**CAS Name**  
Acetic Acid, Hydroxy

**I.D. Nos./Codes** NIOSH Access NO: MC5250000

**Wiswesser Line Notation** QVIQ

**Manufacturer/Distributor**

E. I. du Pont de Nemours & Co. (Inc.)

**Address**

Wilmington, DE 19898

**Chemical Family**

Organic Acid, Aqueous Solution

**Formula**

HO-CH<sub>2</sub>-COOH

**CAS Registry No.**

79-14-1

**Du Pont Registry No.**

**Product Information and Emergency Phone**

(302) 774-2421

**Transportation Emergency Phone**

(800) 424-9300

### PHYSICAL DATA

**Boiling Point**, 760 mm Hg

112°C (234°F)

**Specific Gravity**

1.3

**Vapor Density**

Vapor Is Water

% Volatiles by Vol.

30

**Form**

**Appearance**

Liquid

Clear

**pH Information**

0.5 at 25°C (77°F)

### HAZARDOUS COMPONENTS

**Material(s)**

Hydroxyacetic Acid

**Melting Point**

10°C (50°F)

**Vapor Pressure**

Vapor Is Water

**Solubility in H<sub>2</sub>O**

100%

**Evaporation Rate** (Butyl Acetate = 1)

>1

**Color**

Light Amber

**Odor**

Mild; Like Burnt Sugar

**Octanol/Water Partition Coefficient**

**Approximate %**

70

### HAZARDOUS REACTIVITY

**Instability**

Stable

**Incompatibility** Reacts with metals, oxidizing agents (like strong nitric acid), cyanides, sulfides to produce hydrogen, oxides of nitrogen, hydrogen cyanide or hydrogen sulfide gases, respectively.

**Decomposition**

Will not occur

**Polymerization**

No hazardous polymerization is known.

E-52967

Date: 12/82

JS 016413

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The information set forth herein is furnished free of charge and is based on technical data that Du Pont believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents.

MKIL04595

## FIRE AND EXPLOSION DATA

Flash Point

Method

Autoignition Temperature

Will Not Burn

Flammable Limits in Air, % by Vol.

Lower

Not Applicable

Upper

Fire and Explosion Hazards

Contact with metals may produce flammable hydrogen gas.

Extinguishing Media

Any media appropriate for the type of fire in which hydroxyacetic acid is involved.

Special Fire Fighting Instructions

None.

## HEALTH HAZARD INFORMATION

Exposure Limits

None established.

Significant Routes and Effects of Exposure

May cause burns or damage to the eyes. May cause irritation or burns to the skin.

LD50 (oral, rats) for 70% solution is 4,250 mg/kg. Inhalation LC50 = 7.7mg/L

Hydroxyacetic acid is registered under FIFRA (EPA Reg. No. 352-304-AA) and pursuant to EPA regulations, its container labels carry the statement: "May be harmful or fatal if swallowed."

Safety Precautions

Do not get in eyes, on skin, or on clothing.

Wash thoroughly after handling.

First Aid

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin contact: Immediately flush skin with plenty of water. Wash contaminated clothing before reuse.

If swallowed: Drink milk, raw egg whites, mucilage or gelatin solution; if these are not available, drink large quantities of water. Do not induce vomiting. Call a physician. Never give anything by mouth to an unconscious person.

## PROTECTION INFORMATION

### Ventilation

### Personal Protective Equipment

Chemical splash goggles and rubber gloves.  
Butyl Rubber acid suit if there is reasonable possibility of contact.

### Other

## DISPOSAL INFORMATION

### Aquatic Toxicity

### Spill, Leak or Release

Neutralize with lime or soda ash. Flush spill area with plenty of water.

### Waste Disposal

Comply with federal, state, and local regulations. If approved, may be neutralized with lime or soda ash and flushed to wastewater treatment system.

## SHIPPING INFORMATION

### Transportation

#### DOT Hazard Class\*:

Not regulated as a hazardous material by D.O.T.

#### DOT Shipping Name\*:

#### IMCO Class.:

#### UN No.:

#### NA No.:

#### RQ Quantity\*:

\*49 CFR 172.101

### Shipping Containers

Railroad tank cars, tank trucks, drums, sample bottles.

### Storage Conditions

Keep in a well-ventilated area. Protect bulk storage area from sparks and flame.  
Keep packages tightly closed. Store above 10°C (50°F) freezing point.

## ADDITIONAL INFORMATION AND REFERENCES

For further information, see:

Du Pont Properties, Uses, Storage and Handling Bulletin "Hydroxyacetic Acid" (E-46608).

Du Pont Data Sheet "Hydroxyacetic Acid" (E-19780-1).

JS 016416

E- 52967

Date: 12/82

4



MKIL04598

## MATERIAL SAFETY DATA SHEET

### IDENTIFICATION

#### Name

Methylamine Solutions

Grade Monomethylamine-40%; Dimethylamine-40% and 60%; Trimethylamine-25% **Chemical Family**  
Amine

**Synonyms** Monomethylamine=Methylamine, MMA; **Formula**

Dimethylamine=DMA; Trimethylamine=TMA **See Table, page 4**

**CAS Name** **CAS Registry No.**

**See Table, page 4** **See Table, page 4**

**I.D. Nos./Codes** **Du Pont Registry No.**

#### Manufacturer/Distributor

E. I. du Pont de Nemours & Co. (Inc.)

#### Product Information and Emergency Phone

(302) 774-2421

#### Address

Wilmington, DE 19898

#### Transportation Emergency Phone

(800) 424-9300

### PHYSICAL DATA

**Boiling Point, 760 mm Hg** 36 to 54°C (97 to 129°F) **Freezing Point** -75 to 6°C (-103 to 43°F)

**See Table, page 4** **See Table, page 4**

**Specific Gravity** 0.83 to 0.93

**Vapor Pressure** 215 to 500 mmHg at 25°C

**See Table, page 4**

**See Table, page 4**

**Vapor Density** 1.1 to 2.0 (Air = 1)

**Solubility in H<sub>2</sub>O** Very soluble.

**See Table, page 4**

**% Volatiles by Vol.**

**Evaporation Rate (Butyl Acetate = 1)**

100%

#### Form

#### Appearance

Liquid

Clear

#### Color

Colorless

#### Odor

Ammoniacal, fishy

#### pH Information

Alkaline

#### Octanol/Water Partition Coefficient

### HAZARDOUS COMPONENTS

#### Material(s)

Monomethylamine  
or Dimethylamine  
or Trimethylamine

#### Approximate %

40%  
40% or 60%  
25%

### HAZARDOUS REACTIVITY

#### Instability

Stable

**Incompatibility** May react explosively with mercury. DMA or TMA may react with nitrosating agents, such as sodium nitrite, to form N-nitrosodimethylamine, an OSHA regulated carcinogen.

#### Decomposition

By reaction with mercury

#### Polymerization

Will not occur

JS 016418

E- 52971

Date: 2/83

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The information set forth herein is furnished free of charge and is based on technical data that Du Pont believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents.

## FIRE AND EXPLOSION DATA

### Flash Point

-52 to 6°C; See Table, page 4

### Method

### Autoignition Temperature

190 to 430°C; See Table, page 4

### Flammable Limits in Air, % by Vol.

Lower 2.0 to 4.9

Upper 11.6 to 20.7 See Table, page 4

### Fire and Explosion Hazards

MMA and DMA are extremely flammable.

TMA is flammable.

### Extinguishing Media

Water spray, "Alcohol" foam, CO<sub>2</sub>, Dry chemical.

### Special Fire Fighting Instructions

Use water spray to cool containers.

Methylamine solutions will burn unless very dilute; thoroughly dilute using water spray.

## HEALTH HAZARD INFORMATION

### Exposure Limits

OSHA 8-hour Time Weighted Average (TWA) and ACGIH TLV® are: MMA = 10 ppm or 12 mg/m<sup>3</sup>, DMA = 10 ppm or 18 mg/m<sup>3</sup>, TMA is not regulated but Du Pont observes an exposure limit of 5 ppm.

### Significant Routes and Effects of Exposure

Cause burns.

### Safety Precautions

Do not get in eyes, on skin or clothing.

Do not breathe gas or vapors.

Wash thoroughly after handling.

### First Aid

IN CASE OF CONTACT: Immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing and shoes before re-use.

IF VAPORS ARE INHALED: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficulty, give oxygen.

IF SOLUTIONS ARE SWALLOWED: Immediately dilute by giving large amount of water. Call a physician. Do not induce vomiting. Never give anything by mouth to an unconscious person.

JS 016419

## PROTECTION INFORMATION

**Ventilation** Good general ventilation should be provided to keep vapor concentrations below exposure limits.

### **Personal Protective Equipment**

Have available and wear as appropriate: hard hat with brim, safety spectacles (side shields preferred), chemical splash goggles, full length face shield, rubber gauntlet gloves, rubber apron, rubber safety shoes or rubber boots over leather shoes, self-contained breathing apparatus or full face air-line respirator, complete rubber suit with hood and breathing air supply.

### **Other**

## DISPOSAL INFORMATION

### **Aquatic Toxicity**

TLm 96 = 100-10 ppm

**Spill, Leak or Release** Evacuate area and keep upwind of leak. Use water spray to reduce vapors. Do not flush into sewers. Dike spill. Flush spill area with plenty of water. Dilute solutions may be neutralized with 5% sulfuric acid. Comply with federal, state and local regulations on reporting releases.

### **Waste Disposal**

Comply with federal, state and local regulations. If approved, may be incinerated in specially designed equipment. Do not flush to public sewer. Very dilute water solutions are biodegradable by acclimated bacteria.

## SHIPPING INFORMATION

### **Transportation**

**DOT Hazard Class.:**  
Flammable Liquid

**IMCO Class.:** MMA = 3.1  
DMA & TMA = 3.2

**DOT Shipping Name\*:** Monomethylamine, aqueous solution  
Dimethylamine, aqueous solution  
Trimethylamine, aqueous solution

**UN No.:** MMA = UN 1235  
DMA = UN 1160  
TMA = UN 1297

### **RQ Quantity\*:**

RQ 1000 lb/454 kg

\*49 CFR 172.101

### **Shipping Containers**

Railroad Tank cars, Tank trucks, 55-Gallon steel drums.

### **Storage Conditions**

Keep away from heat, sparks and flame. Keep container tightly closed. Do not store with oxidizing materials. Water scrubber and water sprinkler or deluge system recommended for storage area.

# ADDITIONAL INFORMATION AND REFERENCES

from pages 1 and 2

| Identification:                       | Product                         |                                    |                                   |      |
|---------------------------------------|---------------------------------|------------------------------------|-----------------------------------|------|
|                                       | MMA                             | DMA                                |                                   | TMA  |
| CAS Name                              | Methanamine                     | Methanamine, N-Methyl              | Methanamine, N,N-Dimethyl         |      |
| CAS Registry No.                      | 74-89-5                         | 124-40-3                           | 75-50-3                           |      |
| NIOSH Registry No.                    | PF6300000                       | IP8750000                          | YH2285000                         |      |
| Chemical Formula                      | CH <sub>3</sub> NH <sub>2</sub> | (CH <sub>3</sub> ) <sub>2</sub> NH | (CH <sub>3</sub> ) <sub>2</sub> N |      |
| Properties:                           |                                 |                                    |                                   |      |
| Concentration                         | 40%                             | 40%                                | 60%                               | 25%  |
| Boiling Point °C                      | 48                              | 54                                 | 36                                | 43   |
| °F                                    | 118                             | 129                                | 97                                | 109  |
| Freezing Point °C                     | -38                             | -37                                | -75                               | 6    |
| °F                                    | -36                             | -35                                | -103                              | 43   |
| Specific Gravity (H <sub>2</sub> O=1) | 0.90                            | 0.89                               | 0.83                              | 0.93 |
| Vapor pressure at 25°C; mmHg          | 300                             | 215                                | 500                               | 340  |
| Vapor Density (Air=1)*                | 1.1                             | 1.6                                | 1.6                               | 2.0  |
| Fire And Explosion Data:              |                                 |                                    |                                   |      |
| Flash Point °C                        | -12                             | -18                                | -52                               | 6    |
| °F                                    | 10                              | - 1                                | -61                               | 42   |
| Autoignition C                        | 430                             | 400                                |                                   | 190  |
| Temperature F                         | 806                             | 752                                |                                   | 374  |
| Flammable Limits in Air - % by Vol.   |                                 |                                    |                                   |      |
| Lower*                                | 4.9                             | 2.8                                |                                   | 2.0  |
| Upper*                                | 20.7                            | 14.4                               |                                   | 11.6 |

\* For pure methylamine vapors without effects of water vapor.

For further information, see Du Pont Data Sheet, "Methylamines", and  
Du Pont Storage and Handling bulletin, "Methylamines".

JS 016421



U.S. DEPARTMENT OF LABOR  
Occupational Safety & Health Administration  
**MATERIAL SAFETY DATA SHEET**

| SECTION I   |  |  |  |
|---|--|--|--|
| MANUFACTURER'S NAME<br>E. I. du Pont de Nemours & Co. (Inc.)                |  | EMERGENCY TELEPHONE NO.<br>(302) 774-7500                |  |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>Wilmington, DE 19898 |  |  |  |
| CHEMICAL NAME AND SYNONYMS<br>Methylene Chloride (Dichloromethane)          |  | TRADE NAME AND SYNONYMS<br><del>Methylene Chloride</del> |  |
| CHEMICAL FAMILY<br>Chlorinated Hydrocarbon                                  | FORMULA<br>CH <sub>2</sub> Cl <sub>2</sub> |  |  |

| SECTION II HAZARDOUS INGREDIENTS                      |   |             |  |   |             |
|---|---|-------------|--|---|-------------|
| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV (Units) | ALLOYS AND METALLIC COATINGS           | % | TLV (Units) |
| PIGMENTS  |   |             | BASE METAL                             |   |             |
| CATALYST  |   |             | ALLOYS                                 |   |             |
| VEHICLE   |   |             | METALLIC COATINGS                      |   |             |
| SOLVENTS  |   |             | FILLER METAL PLUS COATING OR CORE FLUX |   |             |
| ADDITIVES   |   |             | OTHERS                                 |   |             |
| OTHERS  |   |             |  |   |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |             |  | % | TLV (Units) |
| N.A.*   |   |             |  |   |             |
|   |   |             |  |   |             |
|   |   |             |  |   |             |
|   |   |             |  |   |             |

| SECTION III PHYSICAL DATA |   |  |                |
|---------------------------|---|--|----------------|
| BOILING POINT (°F.)       | 104   | SPECIFIC GRAVITY (H <sub>2</sub> O = 1) (68°F) | 1.32           |
| VAPOR PRESSURE (mm Hg.)   | 350   | PERCENT VOLATILE BY VOLUME (%)                 | 100            |
| VAPOR DENSITY (AIR = 1)   | 2.93  | EVAPORATION RATE (Ether = 1)                   | Greater Than 1 |
| SOLUBILITY IN WATER       | Negligible  |  |                |
| APPEARANCE AND ODOR       | Heavy, colorless volatile liquid with a pleasant faintly ethereal odor. |  |                |

| SECTION IV FIRE AND EXPLOSION HAZARD DATA   |   |                  |      |
|---|---|------------------|------|
| FLASH POINT (Method used)   | Decomposes  | FLAMMABLE LIMITS | N.A. |
| EXTINGUISHING MEDIA   | N.A. (will not ordinarily burn or support combustion)   |                  |      |
| SPECIAL FIRE FIGHTING PROCEDURES  | Self-contained respiratory equipment should be provided for firemen fighting fires in buildings in which product is stored. |                  |      |
| UNUSUAL FIRE AND EXPLOSION HAZARDS  | Will form explosive mixtures with oxygen under pressure   |                  |      |
| Prolonged contact with metal powders (Al, Mg, etc.) may cause formation of explosive H <sub>2</sub> gas |   |                  |      |
| Not Applicable  |   |                  |      |

**NOTICE FROM DU PONT**

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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| SECTION V HEALTH HAZARD DATA - DO NOT TAKE INTERNALLY |  |
|---|--|
| THRESHOLD LIMIT VALUE                                 | (500) ppm Notice of intended change 250 ppm 1972 ACGIH   |
| EFFECTS OF OVEREXPOSURE                               | Lightheadedness, mental confusion, nausea, vomiting, and headache. Continued exposure may result in staggering and loss of consciousness. High vapor may cause eye and respiratory tract irritation. Splashes in eyes or on skin may cause irritation.   |
| EMERGENCY AND FIRST AID PROCEDURES                    | Quickly remove person from exposure; keep warm, quiet, and get medical help. Remove contaminated clothing at once. Wash affected skin areas with water and/or warm water and soap. For eyes, wash with plenty of water for at least 15 minutes. For ingestion, call physician; induce vomiting if patient is conscious. Never give anything by mouth to an unconscious person. For inhalation, if not breathing, give artificial respiration or oxygen. In all cases call a physician. |

| SECTION VI REACTIVITY DATA           |                |  |  |
|--------------------------------------|----------------|--|--|
| STABILITY                            | UNSTABLE       | X  | CONDITIONS TO AVOID<br>Contact with flame or hot, glowing surfaces may produce toxic gases (phosgene, HCl) |
|                                      | STABLE         |  |  |
| INCOMPATIBILITY (Materials to avoid) |                | Oxygen under pressure; metal powders (Al, Mg, Zn, etc) |  |
| HAZARDOUS DECOMPOSITION PRODUCTS     |                | Phosgene, HCl, H <sub>2</sub> gas                      |  |
| HAZARDOUS POLYMERIZATION             | MAY OCCUR      |  | CONDITIONS TO AVOID  |
|                                      | WILL NOT OCCUR | X  |  |

| SECTION VII SPILL OR LEAK PROCEDURES                      |   |
|---|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED | Avoid prolonged or repeated breathing of vapor. Avoid contact with the skin.  |
| WASTE DISPOSAL METHOD                                     | Residue may be poured on dry sand, earth, or ash at a safe distance from occupied areas and allowed to evaporate into the atmosphere. |

| SECTION VIII SPECIAL PROTECTION INFORMATION  |   |   |
|--|---|---|
| RESPIRATORY PROTECTION (Specify type)<br>None for normal use. Severe exposure: U.S. Bureau Mines respiratory equipment |   |   |
| VENTILATION  | LOCAL EXHAUST<br>Maintain adequate ventilation<br>MECHANICAL (General) Intakes to exhaust system to be at or under source of vapor. | SPECIAL Self-contained breathing apparatus, positive pressure hose masks, airline masks |
| PROTECTIVE GLOVES  | Rubber  | EYE PROTECTION<br>Chemical safety goggles and/or plastic face shield                    |
| OTHER PROTECTIVE EQUIPMENT<br>Hard hats, soft brimmed hats or caps, leather or rubber safety shoes.                    |   |   |

| SECTION IX SPECIAL PRECAUTIONS  |  |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING<br>Volatile solvent - keep bung tightly closed and store in cool, covered location.   |  |
| Indoor storage tanks should have vents piped outdoors to prevent vapors escaping into work areas.   |  |
| OTHER PRECAUTIONS<br>Provisions should be made to prevent moist air from entering storage tanks. Rubbers and shoes should be thoroughly cleaned and ventilated after contamination. Contaminated clothing should be laundered or thoroughly dried before reuse. |  |

For more information, refer to:  
Manufacturing Chemists Association SD-86  
Du Pont bulletins

Wash hands thoroughly before and at end of work.

Methylene Chloride Specifications (A-5-646)  
Recommended Procedures for Handling (A-58160)

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A-79229

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**SECTION I PRODUCT IDENTIFICATION & EMERGENCY INFORMATION**

**PRODUCT NAME**

Methyl Ethyl Ketone

**CHEMICAL NAME**

2-Butanone CAS # 78-93-3

**CHEMICAL FAMILY**  
Ketone

**PRODUCT APPEARANCE**

Clear colorless liquid with a characteristic pungent odor.

**EMERGENCY TELEPHONE NUMBERS:** EXXON CHEMICAL AMERICAS 713-870-6000  
CHEMTREC 800-424-9300

**SECTION II HAZARDOUS COMPONENTS OF MIXTURES**

THE PRECISE COMPOSITION OF THIS MIXTURE IS PROPRIETARY INFORMATION. A MORE COMPLETE DISCLOSURE WILL BE PROVIDED TO A PHYSICIAN OR NURSE IN THE EVENT OF A MEDICAL EMERGENCY.

Not applicable for this product.

For additional information see Section III.

**SECTION III HEALTH INFORMATION AND PROTECTION**

**FIRST AID & NATURE OF HAZARD**

**EYE CONTACT:**

Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.  
Severely irritating. If not removed promptly, will injure eye tissue, which may result in permanent damage.

**INHALATION:**

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.  
High vapor concentrations are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.  
Low order of toxicity.

**SKIN CONTACT:**

Flush with large amounts of water; use soap if available.  
Remove grossly contaminated clothing, including shoes, and launder before reuse.  
Frequent or prolonged contact may irritate and cause dermatitis.  
Low order of toxicity.

**INGESTION:**

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.  
Minimal toxicity.  
Small amounts of the liquid aspirated into the respiratory system during ingestion, or from vomiting, may cause bronchiopneumonia or pulmonary edema.

**ACUTE TOXICITY DATA IS AVAILABLE UPON REQUEST**

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THIS INFORMATION RELATES TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE COMPILED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE. WE DO NOT ACCEPT LIABILITY FOR ANY LOSS OR DAMAGE THAT MAY OCCUR FROM THE USE OF THIS INFORMATION NOR DO WE OFFER WARRANTY AGAINST PATENT INFRINGEMENT.

PRODUCT NAME: Methyl Ethyl Ketone

NO. 506

**PERMISSIBLE EXPOSURE LIMIT: OSHA REQUIRES (29CFR1910.1000):**A TWA of 200 ppm (590 mg/m<sup>3</sup>) for Methyl Ethyl Ketone.**THRESHOLD EXPOSURE LIMIT: ACGIH RECOMMENDS:**A TWA of 200 ppm (590 mg/m<sup>3</sup>), and a STEL of 300 ppm (885 mg/m<sup>3</sup>) for Methyl Ethyl Ketone.**PERSONAL PROTECTION**

Where contact may occur, wear safety glasses with side shields. For open systems where contact is likely, wear long sleeves, chemical resistant gloves, chemical safety goggles and a face shield. Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

**VENTILATION**

The use of mechanical dilution ventilation is recommended whenever this product is used in a confined space, is heated above ambient temperatures, or is agitated. Use explosion-proof ventilation equipment.

**SECTION IV FIRE & EXPLOSION HAZARD**

FLASHPOINT DEG. F : 21 METHOD: TCC

NOTE: TOC: -2 C IMCO: -1 C

FLAMMABLE LIMITS-LEL: 1.4 UEL: 11.4

AUTOIGNITION TEMPERATURE DEG. F : 959

**GENERAL HAZARD**

Flammable Liquid, can release vapors that form flammable mixtures at temperatures at or above the flashpoint. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld or expose containers to flame or other sources of ignition.

**FIRE FIGHTING**

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disperse the vapors. Either allow fire to burn under controlled conditions or extinguish with alcohol type foam and dry chemical. Try to cover liquid spills with foam.

**HAZARDOUS COMBUSTION PRODUCTS**

No unusual

**SECTION V SPILL CONTROL PROCEDURE****LAND SPILL**

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is an EPA hazardous substance (See Section X, Page 4) notify the U.S. EPA if appropriate. Vapors/dust can be harmful/fatal. Warn occupants of downwind areas.

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Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.

Recover by pumping (use an explosion proof or hand pump) or with a suitable absorbent.

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

**WATER SPILL**

Eliminate sources of ignition. Vapors/dust can be harmful/fatal. Warn occupants and shipping in downwind areas.

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

**SECTION VI NOTES**

CAS NUMBER: 000078933

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# MATERIAL SAFETY DATA SHEET

PAGE 4

PRODUCT NAME: Methyl Ethyl Ketone

NO. 506

## SECTION VII TYPICAL PHYSICAL & CHEMICAL PROPERTIES

|  |  |
|--|--|
| SP. GRAVITY<br>0.81 @ 59.9 TO 59.9 ° F       | VAPOR PRESSURE, mmHg, at ° F<br>82.508 @ 75<br>189.769 @ 100 |
| SOLUBILITY IN WATER, WT. % at ° F<br>26 @ 68 | VISCOSITY OF LIQUID, cST at ° F<br>0.5 @ 68                  |
| SP. GRAVITY OF VAPOR, at 1 ATM AIR-1<br>2.5  | FREEZING MELTING POINT/RANGE, ° F<br>-123.34                 |
| EVAPORATION RATE, n-BU ACETATE-1<br>5.6      | BOILING POINT/RANGE, ° F<br>172.94 to 177.98                 |

## SECTION VIII REACTIVITY DATA

|   |  |
|---|--|
| STABILITY?<br>Stable                              | HAZARDOUS POLYMERIZATION OCCUR?<br>Will not occur              |
| CONDITIONS TO AVOID INSTABILITY<br>Not Applicable | CONDITIONS TO AVOID HAZARDOUS POLYMERIZATION<br>Not Applicable |

MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY  
Caustics, amines, alkanolamines, aldehydes, ammonia, strong oxidizing agents, and chlorinated compounds.

HAZARDOUS DECOMPOSITION PRODUCTS  
None

## SECTION IX TRANSPORT & STORAGE

ELECTROSTATIC ACCUMULATION HAZARD  
No, but use proper grounding procedure

|   |   |
|---|---|
| STORAGE TEMPERATURE, ° F<br>Ambient             | LOADING/UNLOADING TEMPERATURE, ° F<br>Ambient               |
| STORAGE/TRANSPORT PRESSURE, mmHg<br>Atmospheric | VISCOSITY AT LOADING/UNLOADING TEMPERATURE, cST<br>0.5 @ 68 |

## SECTION X HAZARD CLASSIFICATION

|   |  |                     |
|---|--|---------------------|
| U.S. DOT CLASSIFICATION<br>Flammable liquid | EPA HAZARDOUS SUBSTANCE<br>Methyl ethyl ketone | AMOUNT LBS.<br>5000 |
|---|--|---------------------|

OTHER

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|  |                               |                                       |
|--|-------------------------------|---------------------------------------|
| REFERENCE NUMBER<br>HDHA-C-00025   | DATE PREPARED<br>MAY 23, 1985 | SUPERCEDES ISSUE DATE<br>MAY 17, 1985 |
| FOR ADDITIONAL PRODUCT INFORMATION CONTACT YOUR TECHNICAL SALES REPRESENTATIVE<br>FOR ADDITIONAL HEALTH/SAFETY INFORMATION CALL 713-870-6885 |                               |                                       |

FEHR BROS.

MATERIAL SAFETY DATA SHEETS - DICHLOROMETHANE 'CH<sub>2</sub>CL<sub>2</sub>'

SECTION 01 IDENTIFICATION

CHEMICAL NAME/SYNONYMS... DICHLOROMETHANE 'CH<sub>2</sub>CL<sub>2</sub>'  
PRODUCT OR TRADE NAME... METHYLENE CHLORIDE  
CAS #..... 75-09-2

8/85

SECTION 02 PHYSICAL DATA

BOILING POINT..... 760 MM HG - 39.8DEG C '104 DEG F'  
% VOLATILE BY VOLUME..... 100  
MELTING POINT..... NOT APPLICABLE  
VAPOR PRESSURE..... 420 MM HG @ 25DEG C  
VAPOR DENSITY/AIR IS 1... 2.93  
SOLUBILITY IN WATER..... % BY WT 1.3  
APPEARANCE & COLOR..... CLEAR COLORLESS LIQUID WITH ETHER-LIKE ODOR  
SPECIFIC GRAVITY..... 'H<sub>2</sub>O IS 1' - 1.32  
EVAPORATION RATE..... 'ETHER IS 1' - 0.62  
FREEZING POINT..... -96.7 DEG C '-142 DEG F'  
PH..... NOT APPLICABLE

SECTION 03 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT..... 'TEST METHOD' NONE 'TCC'  
AUTOIGNITION TEMPERATURE. 662 DEG C '1224 DEG F'  
FLAMMABLE LIMITS IN AIR, % BY VOLUME @ 25 DEG C '77 DEG F'  
LOWER 14  
UPPER 25

EXTINGUISHING MEDIA...

FIRES INVOLVING METHYLENE CHLORIDE ARE UNLIKELY BUT SHOULD ONE OCCUR, IT MAY BE CONTROLLED BY CARBON DIOXIDE, DRY CHEMICALS, OR WATER FOG.

SPECIAL FIRE FIGHTING PROCEDURES...

SELF-CONTAINED RESPIRATORY PROTECTION SHOULD BE PROVIDED FOR FIREMEN FIGHTING FIRES IN BUILDINGS OR CONFINED AREAS WHERE METHYLENE CHLORIDE IS STORED. STORAGE CONTAINERS EXPOSED TO FIRE SHOULD BE KEPT COOL WITH A WATER SPRAY, IN ORDER TO PREVENT PRESSURE BUILDUP.

UNUSUAL FIRE AND EXPLOSION HAZARD...

METHYLENE CHLORIDE IS NONFLAMMABLE AND NONEXPLOSIVE UNDER NORMAL CONDITIONS OF USE. AT HIGH TEMPERATURES METHYLENE CHLORIDE DECOMPOSES TO GIVE OFF HYDROCHLORIC ACID AS GAS PLUS OTHER TOXIC AND IRRITATING VAPORS SUCH AS PHOSGENE. IF STORAGE CONTAINERS ARE EXPOSED TO EXCESSIVE HEAT, OVERPRESSURIZATION OF THE CONTAINERS CAN RESULT.

SECTION 04 REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY...

UNDER NORMAL CONDITIONS OF USE METHYLENE CHLORIDE IS STABLE.

INCOMPATIBILITY...

AVOID CONTACTING METHYLENE CHLORIDE WITH PURE OXYGEN, ALKALI METALS, OPEN FLAMES, AND ELECTRICAL ARCS.

HAZARDOUS DECOMPOSITION PRODUCTS...

AT HIGH TEMPERATURES, METHYLENE CHLORIDE DECOMPOSES TO GIVE OFF HYDROGEN CHLORIDE VAPOR AND SMALL QUANTITIES OF OTHER TOXIC AND IRRITATING VAPORS SUCH AS PHOSGENE.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION...

NONE

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR IMPLIED, IS MADE.

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MATERIAL SAFETY DATA SHEET - DICHLOROMETHANE 'CH<sub>2</sub>CL<sub>2</sub>'

SECTION 05 SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED...

LEAKS SHOULD BE STOPPED.

SPILLS SHOULD BE CLEANED UP IMMEDIATELY.

LARGE SPILLS SHOULD BE CONTAINED AND REMOVED BY VACUUM TRUCK.

SMALLER SPILLS MAY BE SOAKED UP WITH ABSORBENT MATERIALS, WHICH SHOULD BE PLACED IN CLOSED CONTAINERS, LABELED AND STORED IN A SAFE PLACE OUT OF DOOMS TO AWAIT PROPER DISPOSAL. PERSON PERFORMING THIS WORK SHOULD WEAR ADEQUATE PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

NEUTRALIZING CHEMICALS...NONE.

WASTE DISPOSAL METHOD...

DISPOSE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL HEALTH POLLUTION REGULATIONS.

METHYLENE CHLORIDE IS NORMALLY RECOVERED FROM RESIDUES BY DISTILLATION.

SMALL QUANTITIES MAY BE DISPOSED OF VIA AN INCINERATION-SCRUBBER SYSTEM OR A LICENSED WASTE HAULER.

IF REGULATIONS PERMIT, WET ABSORBENT MATERIALS MAY BE AIR DRIED IN A SAFE OPEN UNOCCUPIED AREA.

SECTION 06 HEALTH HAZARD DATA

HEALTH HAZARD DATA...PEL IS 500 PPM '8 HOUR TWA'

INHALATION

IRRITATES RESPIRATORY TRACT.

SKIN CONTACT

MILDLY IRRITATING TO SKIN. SKIN CONTACT MAY PRODUCE A BURNING SENSATION.

PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN TO BECOME RED, ROUGH AND

DRY DUE TO THE REMOVAL OF NATURAL OILS AND MAY RESULT IN DERMATITIS.

SKIN ABSORPTION

METHYLENE CHLORIDE IS RAPIDLY ABSORBED THROUGH THE SKIN.

EYE CONTACT

AN IRRITANT OF THE EYES CAUSING PAIN, LACRIMATION, AND GENERAL INFLAMMATION.

INGESTION

IN INDUSTRIAL ENVIRONMENTS INGESTION IS UNLIKELY, BUT IF INGESTED, IT CAN IRRITATE THE GASTROINTESTINAL TRACT. IT COULD PRODUCE CHEMICAL PNEUMONIA IF VOMITING RESULTS IN ASPIRATION INTO THE LUNGS. IT MAY ULTIMATELY RESULT IN UNCONSCIOUSNESS AND EVEN DEATH.

EFFECTS OF OVEREXPOSURE...

ACUTE OVEREXPOSURE...INHALATION OF VAPORS CAN CAUSE HEADACHE, DIZZINESS AND STUPOR, NAUSEA, AND VOMITING. SEVERE OVEREXPOSURE MAY CAUSE MUSCULAR INCOORDINATION, UNCONSCIOUSNESS AND DEATH.

CHRONIC OVEREXPOSURE...CAN CAUSE HEADACHE, MENTAL CONFUSION, DEPRESSION, FATIGUE, LOSS OF APPETITE, NAUSEA, VOMITING, COUGH, LOSS OF SENSE OF BALANCE AND VISUAL DISTURBANCES. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.

SECTION 07 FIRST AID PROCEDURES AND PHYSICIAN NOTES

EMERGENCY AND FIRST AID PROCEDURES...

OBJECT IS TO SEEK MEDICAL ATTENTION IMMEDIATELY!

EYES...

IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, HOLDING EYES APART TO ENSURE FLUSHING OF THE ENTIRE EYE SURFACE. SEEK MEDICAL ATTENTION IMMEDIATELY.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR IMPLIED, IS MADE.

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MATERIAL SAFETY DATA SHEET - DICHLOROMETHANE 'CH2CL2'

SECTION 07 FIRST AID PROCEDURES AND PHYSICIAN NOTES

SKIN...

WASH CONTAMINATED AREA WITH SOAP AND WATER. A SOOTHING OINTMENT MAY BE APPLIED TO IRRITATED SKIN AFTER CLEANSING. REMOVE CONTAMINATED CLOTHING AND FOOTWEAR AND WASH CLOTHING BEFORE REUSE. DISCARD FOOTWEAR WHICH CANNOT BE DECONTAMINATED. SEEK MEDICAL ATTENTION.

INHALATION...

GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR. IF BREATHING HAS STOPPED ARTIFICIAL RESPIRATION SHOULD BE STARTED. OXYGEN MAY BE ADMINISTERED IF READILY AVAILABLE. SEEK MEDICAL ATTENTION IMMEDIATELY.

INGESTION...

IF SWALLOWED DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, POSITION INDIVIDUAL'S HEAD TO KEEP AIRWAY CLEAR. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. SEEK MEDICAL ATTENTION IMMEDIATELY.

NOTES TO PHYSICIAN...

METHYLENE CHLORIDE OVEREXPOSURE CAN PRODUCE ELEVATED CARBOXYHEMOGLOBIN LEVELS.

SECTION 08 SPECIAL HANDLING INFORMATION

VENTILATION REQUIREMENTS...

WORK AREAS EMPLOYING METHYLENE CHLORIDE SHOULD BE ISOLATED AND CONTAINED, AND PROVIDED WITH ADEQUATE LOCAL EXHAUST VENTILATION TO MAINTAIN THE AIR CONCENTRATION OF METHYLENE CHLORIDE BELOW 500 PPM '8-HOUR TWA' AS REQUIRED BY OSHA.

RESPIRATORY 'SPECIFY IN DETAIL'...

SELF-CONTAINED BREATHING APPARATUS 'COMPRESSED OXYGEN SHOULD NOT BE USED IN TANKS OR OTHER CONFINED SPACES'. POSITIVE PRESSURE HOSE MASK, AIR-LINED MASKS, AND NIOSH-APPROVED INDUSTRIAL CANISTER-TYPE GAS MASKS 'CONCENTRATION NOT EXCEEDING 2% BY VOLUME USED FOR SHORT PERIODS OF EXPOSURE ONLY' ARE ACCEPTABLE.

EYES...

CHEMICAL SAFETY GOGGLES AND PLASTIC FACE SHIELD SHOULD BE WORN WHEN THERE IS A DANGER OF SPLASHING. SPECTACLE-TYPE GLASSES DO NOT PROVIDE SATISFACTORY PROTECTION.

GLOVES...

GLOVES OF POLYVINYL ALCOHOL OR OTHER SOLVENT-RESISTANT MATERIALS SHOULD BE WORN TO MINIMIZE SKIN CONTACT.

OTHER CLOTHING AND EQUIPMENT...

HARD HATS, CHEMICAL-RESISTANT SAFETY SHOES, AND PLASTIC APRON SHOULD BE WORN WHEN HANDLING METHYLENE CHLORIDE. EYE BATH AND SAFETY SHOWER SHOULD BE PROVIDED IN ALL AREAS IN WHICH METHYLENE CHLORIDE IS USED AND/OR HANDLED.

SECTION 09 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONARY STATEMENTS...

WARNING

VOLATILE SOLVENT

CAUSES IRRITATION OF THE EYES, SKIN, AND RESPIRATORY TRACT.

PROLONGED BREATHING OF VAPOR CAN CAUSE LOSS OF CONSCIOUSNESS AND MAY RESULT IN DEATH.

DO NOT GET IN EYES, ON SKIN, ON CLOTHING.

DO NOT TAKE INTERNALLY.

AVOID BREATHING VAPORS.

WHEN HANDLING, WEAR CHEMICAL SPLASH GOGGLES, PROTECTIVE CLOTHING, AND SOLVENT-RESISTANT GLOVES.

WASH THOROUGHLY AFTER HANDLING.

USE ADEQUATE VENTILATION IN WORK AREA.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR IMPLIED, IS MADE.

MK095970

MATERIAL SAFETY DATA SHEET - DICHLOROMETHANE 'CH2CL2'

SECTION 09 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

~~EMPLOY RESPIRATORY PROTECTION WHEN OVEREXPOSED TO VAPORS.~~

AVOID CONTACT WITH FLAME OR HOT GLOWING SURFACES TO PREVENT DECOMPOSITION  
RESULTING IN TOXIC AND IRRITATING VAPORS.

KEEP CONTAINER TIGHTLY CLOSED.

STORE IN A COOL, VENTILATED PLACE.

OTHER HANDLING AND STORAGE REQUIREMENTS...

UNDER NORMAL CONDITIONS, METHYLENE CHLORIDE MAY BE STORED SATISFACTORILY IN  
GALVANIZED IRON, BLACK IRON, OR STEEL. ALUMINUM IS NOT GENERALLY RECOMMENDED FOR  
STORAGE OR HANDLING. STORE DRUMS IN A COOL PLACE, BUNG UP AND CLOSED TIGHTLY.  
VENTILATION SHOULD BE PROVIDED AT THE FLOOR LEVEL. DO NOT STORE IN PITS,  
DEPRESSIONS, BASEMENTS OR UNVENTILATED AREAS. ALL TANKS SHOULD HAVE A TOP AND  
BOTTOM MANHOLE AND A VENT OF A DIAMETER AT LEAST EQUAL TO THAT OF THE FILL OR  
DISCHARGE PIPE. VENT INDOOR TANKS OUTSIDE IN A LOCATION SUCH THAT ESCAPING  
VAPOR WILL NOT CONTAMINATE ANY WORK SPACE AIR. VERTICAL TANKS SHOULD BE OF THE  
CLOSED TOP DESIGN. NORMALLY, A DRYER AND SAFETY ON THE VENT IS RECOMMENDED.

DEPARTMENT OF TRANSPORTATION INFORMATION...

PROPER SHIPPING NAME...METHYLENE CHLORIDE (REGULATED ONLY FOR AIR TRANSPORTATION)

HAZARD CLASS...ORM-A

SECTION 10 HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT...METHYLENE CHLORIDE

%.....100%

HAZARD DATA.....PEL\* IS 500 PPM '8-HR. TWA'

\*OSHA PERMISSIBLE EXPOSURE LEVEL 'PEL'

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR IMPLIED, IS MADE.

# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

NPVLA 6-70

## Section I

|  |  |
|--|--|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY                   |  |
| STREET ADDRESS<br>1437 S. BOULDER - P. O. BOX 3000         |  |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102         |  |
| EMERGENCY TELEPHONE NO.<br>918/560-6189                    |  |
| CHEMICAL NAME AND SYNONYMS<br>2-PROPANONE; DIMETHYL KETONE | TRADE NAME<br>ACETONE                      |
| CHEMICAL FAMILY<br>KETONE                                  | FORMULA<br>C <sub>3</sub> H <sub>6</sub> O |

## Section II - HAZARDOUS INGREDIENTS

|  |   |             |           |   |             |
|--|---|-------------|-----------|---|-------------|
| PAINTS, PRESERVATIVES, & SOLVENTS N.A.                     |   |             |           |   |             |
| PIGMENTS   | % | TLV (Units) | SOLVENTS  | % | TLV (Units) |
|  |   |             |           |   |             |
| CATALYST   |   |             | ADDITIVES |   |             |
|  |   |             |           |   |             |
| VEHICLE  |   |             | OTHERS    |   |             |
|  |   |             |           |   |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |             |           | % | TLV (Units) |
|  |   |             |           |   |             |
|  |   |             |           |   |             |
|  |   |             |           |   |             |
|  |   |             |           |   |             |

## Section III - PHYSICAL DATA

|                         |                                       |                                       |                 |
|-------------------------|---------------------------------------|---------------------------------------|-----------------|
| BOILING POINT (°F.)     | 133.2                                 | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 0.792 @ 20/4°C. |
| VAPOR PRESSURE (mm Hg.) | 226 mm. @ 25°C.                       | PERCENT VOLATILE BY VOLUME (%)        | > 99.99         |
| VAPOR DENSITY (AIR=1)   | 2.0                                   | EVAPORATION RATE (Ethyl Ether)        | 1.8             |
| SOLUBILITY IN WATER     | Infinitely soluble                    |                                       |                 |
| APPEARANCE AND ODOR     | Water white liquid with pungent odor. |                                       |                 |

## Section IV - FIRE AND EXPLOSION HAZARD DATA

|  |                  |     |      |
|--|------------------|-----|------|
| FLASH POINT (METHOD USED)<br>Tag. Closed cup -4°F.                                       | FLAMMABLE LIMITS | LeI | Uel  |
|  |                  | 2.6 | 12.8 |
| EXTINGUISHING MEDIA "Alcohol" foam, carbon dioxide and dry chemical.                     |                  |     |      |
| SPECIAL FIRE FIGHTING PROCEDURES   |                  |     |      |
| UNUSUAL FIRE AND EXPLOSION HAZARDS Forms combustible and/or explosive mixtures with air. |                  |     |      |

JS 016191

MKIL04438

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**Section V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

1000 ppm

EFFECTS OF OVEREXPOSURE

Headaches; irritant to eyes, respiratory tract and skin; narcotic in very high concentration; harmful or fatal if swallowed.

EMERGENCY AND FIRST AID PROCEDURES

If overcome by vapors, remove victim from the contaminated area; keep victim warm and quiet. Call Physician immediately. If breathing has stopped, give artificial respiration. If swallowed, induce vomiting.

**Section VI - REACTIVITY DATA**

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

Stable under most conditions. Forms combustible and explosive mixtures with air and/or oxygen

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

**Section VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is very volatile and extremely flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container; diluted with water and washed into drain or absorbed and removed from area. Avoid inhaling vapors. Use non-sparking tools.

WASTE DISPOSAL METHOD

Incineration or dilution with water.

**Section VIII - SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

Use in well ventilated area.

SPECIAL

MECHANICAL (General)

Vapors heavier than air-- exhaust at floor level.

PROTECTIVE GLOVES

Use polyethylene or nitrile coated gloves.

EYE PROTECTION

Keep vapors and liquid from eyes.

OTHER PROTECTIVE EQUIPMENT

**Section IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed, do not store or use near heat, sparks or flame. Use non-sparking tools.

OTHER PRECAUTIONS

Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid.

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

## Section I

|                            |                       |                                    |                           |
|----------------------------|-----------------------|------------------------------------|---------------------------|
| MANUFACTURER'S NAME        |                       | GETTY OIL COMPANY                  |                           |
| STREET ADDRESS             |                       | 1437 SOUTH BOULDER, P. O. BOX 3000 |                           |
| CITY, STATE, AND ZIP CODE  |                       | TULSA, OKLAHOMA 74102              |                           |
| EMERGENCY TELEPHONE NO.    |                       | 918/560-6192                       |                           |
| CHEMICAL NAME AND SYNONYMS | Lacquer Diluent       | TRADE NAME                         | Gettysolve L              |
| CHEMICAL FAMILY            | Aliphatic Hydrocarbon | FORMULA                            | $C_7H_{16}$ & $C_8H_{18}$ |

## Section II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N. A.

| PIGMENTS  | % | TLV (Units) | SOLVENTS  | % | TLV (Units) |
|---|---|-------------|-----------|---|-------------|
|   |   |             |           |   |             |
| CATALYST  |   |             | ADDITIVES |   |             |
| VEHICLE   |   |             | OTHERS    |   |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N. A. |   |             |           | % | TLV (Units) |
|   |   |             |           |   |             |
|   |   |             |           |   |             |
|   |   |             |           |   |             |
|   |   |             |           |   |             |
|   |   |             |           |   |             |

## Section III - PHYSICAL DATA

|                         |                    |   |               |
|-------------------------|--------------------|---|---------------|
| BOILING POINT (°F.)     | 200-230            | SPECIFIC GRAVITY ( $H_2O=1$ )               | 0.751 20/4°C. |
| VAPOR PRESSURE (mm Hg.) | 100 mm @ 31.6°C.   | PERCENT VOLATILE BY VOLUME (%)              | >99.99        |
| VAPOR DENSITY (AIR=1)   | Approx. 3.6        | EVAPORATION RATE ( <del>Ethyl Ether</del> ) | 3.5           |
| SOLUBILITY IN WATER     | Insoluble          |   |               |
| APPEARANCE AND ODOR     | Water white liquid |   |               |
|                         | Sweet naphtha odor |   |               |

## Section IV - FIRE AND EXPLOSION HAZARD DATA

|   |  |                  |         |         |
|---|--|------------------|---------|---------|
| FLASH POINT (METHOD USED)                             | Tag. Closed Cup 20°F.  | FLAMMABLE LIMITS | LeI 1.0 | Uel 7.0 |
| EXTINGUISHING MEDIA                                   | Carbon dioxide, dry chemical, foam or other media for Class B fire |                  |         |         |
| SPECIAL FIRE FIGHTING PROCEDURES                      |  |                  |         |         |
| UNUSUAL FIRE AND EXPLOSION HAZARDS                    |  |                  |         |         |
| Forms combustible and/or explosive mixtures with air. |  |                  |         |         |

JS 016186

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JS 016182

**Section V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

500 ppm

EFFECTS OF OVEREXPOSURE

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs.  
Liquid is harmful and/or fatal if swallowed.

EMERGENCY AND FIRST AID PROCEDURES

If overcome by vapors remove victim from contaminated area; keep victim warm and quiet.  
Call Physician immediately; if breathing has stopped, give artificial respiration. If  
swallowed, do not induce vomiting. Avoid frequent and prolonged contact with the skin.

**Section VI - REACTIVITY DATA**

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

Stable under most conditions; forms combustible and/or  
explosive mixtures with air and/or oxygen.

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

None - combustion products carbon dioxide and water.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

**Section VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is very volatile and highly flammable and care should be taken to prevent fire.  
Spilled material may be pumped into another container or absorbed and removed from area.  
All flames, sparks and ignition sources should be kept from area. Use non-sparking tools.  
Avoid inhaling vapors.

WASTE DISPOSAL METHOD

Incineration.

**Section VIII - PHYSICAL AND CHEMICAL INFORMATION**

RESPIRATORY PROTECTION (Specify type)

Self-contained or supply air masks for entering area of concentrated vapor.

VENTILATION

LOCAL EXHAUST

Use in well ventilated area.

MECHANICAL (General)

Exhaust vapors from floor level.

SPECIAL

Vapors are heavier than air.

OTHER

PROTECTIVE GLOVES

Use rubber and/or plastic gloves

EYE PROTECTION

General - keep liquid and vapor out of eyes.

OTHER PROTECTIVE EQUIPMENT

**Section IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed-do not store or use near heat, sparks or flame. Keep in cool dry  
place with good ventilation.

OTHER PRECAUTIONS

Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring  
liquid. Use non-sparking tools.

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

## Section I

|  |   |
|--|---|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY             |   |
| STREET ADDRESS<br>1437 SOUTH BOULDER, P. O. BOX 3000 |   |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102   |   |
| EMERGENCY TELEPHONE NO.<br>918/ 560-6192             |   |
| CHEMICAL NAME AND SYNONYMS<br>RUBBER SOLVENT NAPHTHA | TRADE NAME<br>Gettysolve R  |
| CHEMICAL FAMILY<br>ALIPHATIC HYDROCARBON             | FORMULA<br>MIXED C <sub>6</sub> 's, C <sub>7</sub> 's and C <sub>8</sub> 's |

## Section II — HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|--|---|----------------|-----------|---|----------------|
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
|  |   |                |           |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
|  |   |                |           |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

## Section III — PHYSICAL DATA

|                         |  |                                       |               |
|-------------------------|--|---------------------------------------|---------------|
| BOILING POINT (°F.)     | 130-255  | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 0.708 20/4°C. |
| VAPOR PRESSURE (mm Hg.) | 100 mm @ 37.8°C.                                 | PERCENT VOLATILE BY VOLUME (%)        | >99.99        |
| VAPOR DENSITY (AIR=1)   | 3.30   | EVAPORATION RATE (Ethyl Ether)        | 3.2           |
| SOLUBILITY IN WATER     | Insoluble  |                                       |               |
| APPEARANCE AND ODOR     | Water white liquid with a<br>sweet naphtha odor. |                                       |               |

## Section IV — FIRE AND EXPLOSION HAZARD DATA

|  |        |                  |            |            |
|--|--------|------------------|------------|------------|
| FLASH POINT (METHOD USED)<br>Tag, closed cup   | -18°F. | FLAMMABLE LIMITS | LeI<br>1.2 | Uel<br>7.5 |
| EXTINGUISHING MEDIA<br>Carbon dioxide; dry chemical, foam or other media for Class B fire. |        |                  |            |            |
| SPECIAL FIRE FIGHTING PROCEDURES<br>JS 016100  |        |                  |            |            |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>Forms Combustible and explosive mixtures with air.   |        |                  |            |            |

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**Section V - HEALTH HAZARD DATA**THRESHOLD LIMIT VALUE  
500 ppm

## EFFECTS OF OVEREXPOSURE

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs.  
Liquid is harmful and/or fatal if swallowed.

## EMERGENCY AND FIRST AID PROCEDURES

If overcome by vapors remove victim from contaminated area; keep victim warm and quiet. Call Physician immediately. If breathing has stopped, give artificial respiration. If swallowed, do not induce vomiting. Avoid frequent and prolonged contact with skin.

**Section VI - REACTIVITY DATA**

|   |                |   |  |
|---|----------------|---|--|
| STABILITY   | UNSTABLE       |   | CONDITIONS TO AVOID  |
|   | STABLE         | X | Stable under most conditions; forms combustible and explosive mixtures with air and/or oxygen. |
| INCOMPATIBILITY (Materials to avoid)  |                |   |  |
| HAZARDOUS DECOMPOSITION PRODUCTS None - combustion products are carbon dioxide and water. |                |   |  |
| HAZARDOUS POLYMERIZATION  | MAY OCCUR      |   | CONDITIONS TO AVOID  |
|   | WILL NOT OCCUR | X |  |

**Section VII - SPILL OR LEAK PROCEDURES**

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is very volatile and highly flammable and care should be exercised to prevent fire.  
Spilled material may be pumped into another container, or absorbed and removed from the area.  
All flames, sparks and ignition sources should be kept out of area; non-sparking tools used.  
Avoid inhaling vapors.

## WASTE DISPOSAL METHOD

Incineration.

**Section VIII - PERSONAL PROTECTION INFORMATION**

## RESPIRATORY PROTECTION (Specify type)

Self contained or supply air masks for entering area of concentrated vapor.

|             |                                  |                             |
|-------------|----------------------------------|-----------------------------|
| VENTILATION | LOCAL EXHAUST                    | SPECIAL<br>OTHER            |
|             | MECHANICAL (General)             |                             |
|             | Use in well ventilated area.     | Vapors are heavier than air |
|             | Exhaust vapors from floor level. |                             |

## PROTECTIVE GLOVES

Use rubber and/or plastic gloves

## OTHER PROTECTIVE EQUIPMENT

## EYE PROTECTION

General - keep liquid and vapor out of eyes.

**Section IX - SPECIAL PRECAUTIONS**

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed; do not store or use near heat, sparks or flame. Keep in a cool dry place with good ventilation.

## OTHER PRECAUTIONS

Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid. Use non-sparking tools.

# GETTYSOLVE-R

## A L I P H A T I C   H Y D R O C A R B O N

Gettysolve-R is a special rubber solvent naphtha manufactured at our El Dorado refinery. Its uniform evaporation rate and freedom from heavy ends make it unique in performance and unsurpassed in quality.

Like all Getty products, Gettysolve-R offers you superior quality and dependable delivery. It's one more part of Getty's expanding commitment to your petrochemical needs.

### MAJOR USES

Rubber Cement  
Rubber Products  
Tires

### SHIPPING

Shipping Point:

El Dorado, Kansas

Wichita, Kansas (Drums Only)

Method of Shipment:

Drums, Tank Truck and Tank Car

D.O.T. Classification:

Petroleum Naphtha; Flammable Liquid,

Flammable Placard, Hazardous Materials

I.D. No.: UN 1255

### TOXICITY

Threshold Limit Value:

500 ppm, OSHA Standard. 400 ppm recommended by the American Council of Governmental Industrial Hygienists.

CAS: 64742-89-8

RTECS: VL8047000

EPA I.D. No.: F001-5999

## TYPICAL ANALYSIS

| PROPERTY                         | TYPICAL VALUES | ASTM TEST |
|----------------------------------|----------------|-----------|
| Gravity                          |                |           |
| API-60°F                         | 67.0           | D287      |
| Specific-60°F                    | 0.713          | D287      |
| Pounds per Gallon                |                |           |
| 60°F                             | 5.92           |           |
| Distillation, °F                 |                | D86       |
| IBP                              | 134            |           |
| 10%                              | 164            |           |
| 50%                              | 196            |           |
| 90%                              | 232            |           |
| Dry Point                        | 245            |           |
| Color (Saybolt)                  | 30             | D156      |
| Aniline Point, °F                | 131            | D611      |
| Kauri Butanol-No.                | 35             | D1133     |
| Aromatic Content,                |                |           |
| Vol. % (Benzene)                 | 0.30           | D2267     |
| Flash Point, °F                  | -18            | D56       |
| Corrosion, Cu Strip              | 1A             | D130      |
| Non-Volatile Content, mg/100 ml. | 0.0009         | D1353     |
| Sulfur, Wt. %                    | 0.0050         | D3120     |
| Doctor Test                      | Negative       | D484      |
| Reid Vapor Pressure              |                |           |
| (PSIA at 100°F)                  | 4.4            | D323      |

## SPECIFICATION

| PROPERTY                  | LIMITS   | ASTM TEST |
|---------------------------|----------|-----------|
| Distillation, °F          |          | D86       |
| IBP                       | 130-140  |           |
| 90% Max                   | 240      |           |
| Dry Point                 | 240-255  |           |
| Color (Saybolt), Min.     | 30       | D156      |
| Aniline Point, °F, Max.   | 139      | D611      |
| Aromatic Content,         |          |           |
| Vol. % (Benzene), Max.    | 0.50     | D2267     |
| Corrosion, Cu Strip, Max. | 1        | D130      |
| Doctor Test, Min.         | Negative | D484      |
| Kauri Butanol-No., Min.   | 33       | D1133     |

JS 016182

MKIL04429

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

## Section I

|  |  |
|--|--|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY           |  |
| STREET ADDRESS<br>P. O. BOX 3000                   |  |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102 |  |
| EMERGENCY TELEPHONE NO.<br>918-560-6192            |  |
| CHEMICAL NAME AND SYNONYMS<br>Textile Spirits      | TRADE NAME<br>Gettysolve Special H   |
| CHEMICAL FAMILY<br>Aliphatic hydrocarbon           | FORMULA<br>Mixed C <sub>6</sub> H <sub>14</sub> & C <sub>7</sub> H <sub>16</sub> |

## Section II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV (Units) | SOLVENTS  | % | TLV (Units) |
|--|---|-------------|-----------|---|-------------|
|  |   |             |           |   |             |
| CATALYST   |   |             | ADDITIVES |   |             |
|  |   |             |           |   |             |
| VEHICLE  |   |             | OTHERS    |   |             |
|  |   |             |           |   |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |             |           | % | TLV (Units) |
|  |   |             |           |   |             |
|  |   |             |           |   |             |
|  |   |             |           |   |             |
|  |   |             |           |   |             |
|  |   |             |           |   |             |

## Section III - PHYSICAL DATA

|                         |                         |   |        |
|-------------------------|-------------------------|---|--------|
| BOILING POINT (°F.)     | 150 - 180 °F.           | SPECIFIC GRAVITY (H <sub>2</sub> O=1) 60/60 °F. | 0.682  |
| VAPOR PRESSURE (mm Hg.) | 244 mm @ 37.7 °C.       | PERCENT VOLATILE BY VOLUME (1%)                 | >99.99 |
| VAPOR DENSITY (AIR=1)   | Approx. 3.1             | EVAPORATION RATE (Ethyl Ether)                  | 1.5    |
| SOLUBILITY IN WATER     | Insoluble               |   |        |
| APPEARANCE AND ODOR     | Water white liquid      |   |        |
|                         | having mild sweet odor. |   |        |

## Section IV - FIRE AND EXPLOSION HAZARD DATA

|   |                  |     |     |
|---|------------------|-----|-----|
| FLASH POINT (METHOD USED)<br>Tag. closed cup flash -20 °F.                                  | FLAMMABLE LIMITS | Lel | Uel |
|   |                  | 1.1 | 7.5 |
| EXTINGUISHING MEDIA<br>Carbon dioxide, dry chemical, foam or other media for Class B fires  |                  |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Treat same as a gasoline fire.                          |                  |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>Forms combustible and/or explosive mixtures with air. |                  |     |     |

JS 016176

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**Section V - HEALTH HAZARD DATA**

|   |         |
|---|---------|
| THRESHOLD LIMIT VALUE   | 500 ppm |
| EFFECTS OF OVEREXPOSURE<br>Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs.<br>Liquid is harmful and/or fatal if swallowed.  |         |
| EMERGENCY AND FIRST AID PROCEDURES<br>If overcome by vapors, remove victim from contaminated area; keep victim warm and quiet. Call Physician immediately. If breathing has stopped give artificial respiration. If swallowed do not induce vomiting. Avoid frequent and prolonged contact with skin. |         |

**Section VI - REACTIVITY DATA**

|  |                |   |   |
|--|----------------|---|---|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID   |
|  | STABLE         | X | Stable under most conditions; forms combustible and/or explosive mixtures with air and/or oxygen. |
| INCOMPATIBILITY (Materials to avoid)<br>Reacts vigorously with oxidizing agents. |                |   |   |
| HAZARDOUS DECOMPOSITION PRODUCTS   |                |   |   |
| HAZARDOUS POLYMERIZATION   | MAY OCCUR      |   | CONDITIONS TO AVOID   |
|  | WILL NOT OCCUR | X |   |

**Section VII - SPILL OR LEAK PROCEDURES**

|   |
|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED<br>Material is very volatile and highly flammable and care should be exercised to prevent fire.<br>Spilled material may be pumped into another container or absorbed and removed from area. |
| All flames, sparks and ignition sources should be kept out of area; use non-sparking tools.   |
| Avoid inhaling vapors.  |
| WASTE DISPOSAL METHOD<br>Incineration or dispose in accordance with local, State and Federal regulations  |

**Section VIII - PROTECTIVE EQUIPMENT INFORMATION**

|   |   |  |
|---|---|--|
| RESPIRATORY PROTECTION (Specify type)<br>Self-contained or supply air masks for entering area of concentrated vapors. |   |  |
| VENTILATION   | LOCAL EXHAUST<br>Use in well ventilated area.<br>MECHANICAL (General)<br>Exhaust vapors from floor level. | SPECIAL<br>Vapors are heavier than air.<br>OTHER |
| PROTECTIVE GLOVES<br>Use rubber and/or plastic gloves.  | EYE PROTECTION<br>General - keep liquid and vapor out of eyes.  |  |
| OTHER PROTECTIVE EQUIPMENT<br>Use eye bath and safety shower.   |   |  |

**Section IX - SPECIAL PRECAUTIONS**

|   |
|---|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING<br>Keep container closed, do not store or use near heat, sparks or flame. Keep in cool dry place with good ventilation. |
| OTHER PRECAUTIONS<br>Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid. Use non-sparking tools.                          |

# GETTYSOLVE-SPECIAL-H

## A L I P H A T I C      H Y D R O C A R B O N

Gettysolve Special-H is a light naphtha hydrocarbon fraction manufactured at our El Dorado refinery for industries requiring a specific evaporation rate. Its extremely low non-volatile content, uniformity and reduced polymerization tendencies make Gettysolve Special-H versatile enough for many uses.

Like every Getty product, Gettysolve Special-H offers you superior quality and dependable delivery. It's one more part of Getty's commitment to your petrochemical needs.

### MAJOR USES

Rubber Cements  
Tapes  
Ink Diluent  
Inedible Oil  
Extraction  
Sealants

### SHIPPING

Shipping Point:

El Dorado, Kansas  
Wichita, Kansas (Drums Only)

Method of Shipment:

Drums, Tank Truck and Tank Car

D.O.T. Classification:

Petroleum Naphtha: Flammable Liquid,  
Flammable Placard. Hazardous Materials  
I.D. No.: UN 1255

### TOXICITY

Threshold Limit Value:

500 ppm, OSHA Standard

CAS: 8030-30-6

RTECS: DE3030000

## TYPICAL ANALYSIS

| PROPERTY                        | TYPICAL VALUES | ASTM TEST |
|---------------------------------|----------------|-----------|
| Gravity                         |                |           |
| API-60°F                        | 75.9           | D287      |
| Specific-60°F                   | 0.682          | D287      |
| Pounds per Gallon               |                |           |
| 60°F                            | 5.68           |           |
| Distillation, °F                |                | D1078     |
| IBP                             | 150            |           |
| 10%                             | 152            |           |
| 50%                             | 153            |           |
| 90%                             | 157            |           |
| Dry Point                       | 175            |           |
| Color (Saybolt)                 | +30            | D156      |
| Aniline Point, °F               | 142            | D611      |
| Kauri Butanol-No.               | 32             | D1133     |
| Aromatic Content,               |                |           |
| Vol. % (Benzene)                | 0.05           | D2267     |
| Flash Point, °F                 | -20            | D56       |
| Corrosion, Cu Strip             | 1A             | D130      |
| Non-Volatile Content, gm/100 ml | 0.0006         | D1353     |
| Sulfur, Wt. %                   | 0.001          | D3120     |
| Doctor Test                     | Negative       | D484      |
| Reid Vapor Pressure             |                |           |
| (PSIA at 100°F)                 | 4.7            | D323      |

## SPECIFICATION

| PROPERTY                        | LIMITS | ASTM TEST |
|---------------------------------|--------|-----------|
| Distillation, °F                |        | D1078     |
| IBP, Min.                       | 145    |           |
| 50%, Max.                       | 160    |           |
| Dry Point, Max.                 | 180    |           |
| Color (Saybolt), Min.           | 30     | D156      |
| Aromatic Content,               |        |           |
| % Vol. (Benzene), Max.          | 0.2    | D2267     |
| Corrosion, Cu Strip, Min.       | 1      | D130      |
| Non Volatile Content, gm/100 ml |        |           |
| Max.                            | 0.002  | D1353     |

JS 016175

MKIL04422

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

## Section I

|  |   |
|--|---|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY                   |   |
| STREET ADDRESS<br>1437 SOUTH BOULDER, P.O. BOX 3000        |   |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102         |   |
| EMERGENCY TELEPHONE<br>918/560-6192                        |   |
| CHEMICAL NAME AND SYNONYMS<br>Light Rubber Solvent Naphtha | TRADE NAME<br>Gettysolve H  |
| CHEMICAL FAMILY<br>Aliphatic hydrocarbon                   | FORMULA<br>C <sub>6</sub> H <sub>14</sub> & C <sub>7</sub> H <sub>16</sub> mixed. |

## Section II — HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|--|---|----------------|-----------|---|----------------|
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

## Section III — PHYSICAL DATA

|                         |                    |                                       |                |
|-------------------------|--------------------|---------------------------------------|----------------|
| BOILING POINT (°F.)     | 150-210            | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 0.697 20/4 °C. |
| VAPOR PRESSURE (mm Hg.) | 100 mm @ 28.8 °C.  | PERCENT VOLATILE BY VOLUME (%)        | > 99.99        |
| VAPOR DENSITY (AIR=1)   | 3.21               | EVAPORATION RATE (..... Ethyl Ether)  | 1.8            |
| SOLUBILITY IN WATER     | Insoluble          |                                       |                |
| APPEARANCE AND ODOR     | Water white liquid |                                       |                |
|                         | Sweet naphtha odor |                                       |                |

## Section IV — FIRE AND EXPLOSION HAZARD DATA

|   |                  |            |            |
|---|------------------|------------|------------|
| FLASH POINT (METHOD USED)<br>Tag, Closed Cup -25 °F.  | FLAMMABLE LIMITS | Lel<br>1.1 | Uel<br>7.5 |
| EXTINGUISHING MEDIA<br>Carbon dioxide, dry chemical, foam or other media for Class B fires. |                  |            |            |
| SPECIAL FIRE FIGHTING PROCEDURES  |                  |            |            |

JS 016171

### UNUSUAL FIRE AND EXPLOSION HAZARDS

Forms combustible and/or explosive mixtures with air.

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**Section V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

500 ppm

**EFFECTS OF OVEREXPOSURE**

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs.  
Liquid is harmful and/or fatal if swallowed.

**EMERGENCY AND FIRST AID PROCEDURES**

If overcome by vapors, remove victim from contaminated area; keep victim warm and quiet. Call Physician immediately. If breathing has stopped give artificial respiration. If swallowed do not induce vomiting. Avoid frequent and prolonged contact with skin.

**Section VI - REACTIVITY DATA**

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

Stable under most conditions; forms combustible and/or explosive mixtures with air and/or oxygen.

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

None - combustion products are carbon dioxide and water.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

**Section VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is very volatile and highly flammable and care should be exercised to prevent fire.  
Spilled material may be pumped into another container or absorbed and removed from area.

All flames, sparks and ignition sources should be kept out of area; use non-sparking tools.

Avoid inhaling vapors.

WASTE DISPOSAL METHOD

Incineration.

**Section VIII - PERSONAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type)

Self-contained or supply air masks for entering area of concentrated vapors.

VENTILATION

LOCAL EXHAUST

Use in well ventilated area.

SPECIAL

Vapors are heavier than air.

MECHANICAL (General)

Exhaust vapors from floor level.

OTHER

PROTECTIVE GLOVES

Use rubber and/or plastic gloves.

EYE PROTECTION

General - keep liquid and vapor out of eyes.

OTHER PROTECTIVE EQUIPMENT

**Section IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed, do not store or use near heat, sparks or flame. Keep in cool dry place with good ventilation.

OTHER PRECAUTIONS

Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid. Use non-sparking tools.

# GETTYSOLVE-H

## A L I P H A T I C      H Y D R O C A R B O N

Gettysolve-H is a mixed hexane-heptane fraction manufactured at our El Dorado refinery. Its quick, clean evaporation leaves no foreign odor or residue. And its low non-volatile content (0.0003 gm/100 ml), reduced benzene level and low sulfur content make Gettysolve-H ideal for a wide variety of uses.

Like all Getty products, Gettysolve-H offers you superior quality and dependable delivery. It's one more part of Getty's expanding commitment to your petrochemical needs.

### MAJOR USES

Rubber Cement  
Inks  
Pharmaceutical  
Extractions  
Lacquers

### SHIPPING

Shipping Point:  
El Dorado, Kansas  
Wichita, Kansas (Drums Only)  
Method of Shipment:  
Drums, Tank Truck and Tank Car

### D.O.T. Classification:

Petroleum Naphtha; Flammable Liquid,  
Flammable Placard. Hazardous Materials  
I.D. No.: UN 1255

### TOXICITY

Threshold Limit Value:  
500 ppm, OSHA Standard  
CAS: 8030-30-6  
RTECS: DE3030000

## TYPICAL ANALYSIS

| PROPERTY                               | TYPICAL VALUES | ASTM TEST |
|--|----------------|-----------|
| Gravity                                |                |           |
| API-60°F                               | 70.6           | D287      |
| Specific-60°F                          | 0.700          | D287      |
| Pounds per Gallon<br>60°F              | 5.83           |           |
| Distillation, °F                       |                | D86       |
| IBP                                    | 158            |           |
| 10%                                    | 165            |           |
| 50%                                    | 176            |           |
| 90%                                    | 196            |           |
| Dry Point                              | 205            |           |
| Color (Saybolt)                        | 30             | D156      |
| Aniline Point, °F                      | 138            | D611      |
| Kauri Butanol-No.                      | 33.5           | D1133     |
| Aromatic Content,                      |                |           |
| Vol. % Toluene                         | 1.0            | D2267     |
| Vol. % Benzene                         | 0.05           | D2267     |
| Flash Point, °F                        | -20            | D56       |
| Corrosion, Cu Strip                    | 1A             | D130      |
| Non-Volatile Content, gm/100 ml        | 0.0003         | D1353     |
| Sulfur, Wt. %                          | 0.001          | D3120     |
| Doctor Test                            | Negative       | D484      |
| Reid Vapor Pressure<br>(PSIA at 100°F) | 4              | D323      |

## SPECIFICATION

| PROPERTY                  | LIMITS   | ASTM TEST |
|---------------------------|----------|-----------|
| Distillation, °F          |          | D86       |
| IBP, Min.                 | 150      |           |
| Dry Point, Max.           | 210      |           |
| Color (Saybolt), Min.     | 30       | D156      |
| Aromatic Content,         |          |           |
| Vol. % Toluene, Max.      | 2.0      | D2267     |
| Vol. % Benzene, Max.      | 0.2      | D2267     |
| Corrosion, Cu Strip, Max. | 1        | D130      |
| Doctor Test, Min.         | Negative | D484      |
| Sulfur, Wt. % Max         | 0.002    | D2785     |

JS 016170

MKIL04417

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

| Section I   |  |
|---|--|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY                          |  |
| STREET ADDRESS<br>P. O. Box 3000 1437 South Boulder               |  |
| CITY, STATE, AND ZIP CODE<br>Tulsa, Oklahoma 74102                |  |
| EMERGENCY TELEPHONE NO.<br>918-560-6192                           |  |
| CHEMICAL NAME AND SYNONYMS<br>Methyl Benzene; Toluene (Nitration) | TRADE NAME<br>Getty Toluene              |
| CHEMICAL FAMILY<br>Aromatic Hydrocarbon                           | FORMULA<br>C <sub>7</sub> H <sub>8</sub> |

## Section II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|--|---|----------------|-----------|---|----------------|
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
|  |   |                |           |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
|  |   |                |           |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

## Section III - PHYSICAL DATA

|                         |                    |                                       |       |
|-------------------------|--------------------|---------------------------------------|-------|
| BOILING POINT (°F.)     | 232                | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | .871  |
| VAPOR PRESSURE (mm Hg.) | 53MM @ 100°F.      | PERCENT VOLATILE BY VOLUME (%)        | 99.99 |
| VAPOR DENSITY (AIR=1)   | 3.14               | EVAPORATION RATE<br>(Ethyl Ether)     | 4.5   |
| SOLUBILITY IN WATER     | Insoluble          |                                       |       |
| APPEARANCE AND ODOR     | Water white liquid |                                       |       |
|                         | Mild aromatic odor |                                       |       |

## Section IV - FIRE AND EXPLOSION HAZARD DATA

|   |   |                  |     |     |
|---|---|------------------|-----|-----|
| FLASH POINT (METHOD USED)                                       | 40°F. Closed Cup  | FLAMMABLE LIMITS | Lel | Uel |
|   |   |                  | 1.4 | 6.7 |
| EXTINGUISHING MEDIA   | Foam, Carbon Dioxide, Dry Chemical or other media for Class B fires |                  |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES                                |   |                  |     |     |
|   |   |                  |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS                              |   |                  |     |     |
| Forms combustible and explosive mixtures with air an/or oxygen. |   |                  |     |     |

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**Section V — HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE 200 PPM

**EFFECTS OF OVEREXPOSURE**

Vapors are intoxicating and narcotic and irritating to mucous membranes.

Liquid is harmful and/or fatal if swallowed.

**SYMPTOMS AND FIRST AID PROCEDURES**

If overcome by vapors, remove victim from contaminated area; keep victim warm and quiet; if breathing has stopped, give artificial respiration. Call physician immediately.

Eye contact; flush with water; wash skin with mild soapy water.

**Section VI — REACTIVITY DATA**

|           |          |   |  |
|-----------|----------|---|--|
| STABILITY | UNSTABLE |   | CONDITIONS TO AVOID  |
|           | STABLE   | X | Forms combustible and explosive mixtures with air or oxygen. |

COMPATIBILITY (Materials to avoid)

Do not react vigorously with oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Decomposition products are carbon dioxide and water. Emits toxic fumes when heated.

|                          |                |   |                             |
|--------------------------|----------------|---|-----------------------------|
| HAZARDOUS POLYMERIZATION | MAY OCCUR      |   | CONDITIONS TO AVOID         |
|                          | WILL NOT OCCUR | X | Does not heat spontaneously |

**Section VII — SPILL OR LEAK PROCEDURES**

ACTIONS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container, or absorbed and removed from the area. All sparks, flames or ignition sources should be kept out of area. Non-sparking tools should be used. Respiratory protection should be provided if spill is in confined area.

DISPOSAL METHOD

Incineration. -- Or dispose in accordance with local State and Federal regulations.

**Section VIII — SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type)

Self contained or supply air masks for entering area of concentrated vapor.

|             |   |   |
|-------------|---|---|
| VENTILATION | LOCAL EXHAUST<br>Use in well ventilated area              | SPECIAL<br>Vapors are heavier than air. |
|             | MECHANICAL (General)<br>Mechanical exhaust at floor level | OTHER                                   |

PROTECTIVE GLOVES

Use synthetic chem. resistant gloves

EYE PROTECTION

Keep liquid and vapors out of eyes.

OTHER PROTECTIVE EQUIPMENT

Eye bath and safety shower.

**Section IX — SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed. Do not store or use near heat, sparks or flame. Avoid breathing vapors. Keep in cool dry place.

OTHER PRECAUTIONS

Ground all containers when transferring liquid. Avoid prolonged contact with liquid and/or vapors. Use non-sparking tools.

# GETTY TOLUENE

## A R O M A T I C   H Y D R O C A R B O N

Getty Toluene is manufactured from a reformat distillate fraction at our El Dorado and Delaware City refineries. Our toluene features an extremely narrow boiling range, low benzene content and excellent color. Its superior quality surpasses even ASTM standards for nitration grade toluene.

Like every Getty product, our toluene offers you greater quality and dependable delivery. It's one more part of Getty's expanding commitment to your petrochemical needs.

Getty toluene meets the following specifications:

ASTM D841-80, Nitration Grade  
ASTM D362-80, Industrial Grade  
Army & Navy Specification, Jan-T-171, Grade A & B  
Federal Specification, TT-T-548D

### MAJOR USES

|                 |                     |
|-----------------|---------------------|
| Benzene         | Phenol              |
| Solvents        | Benzoic Acid        |
| Toluene         | Paints and Coatings |
| Diisocyanates   |                     |
| Benzyl Chloride |                     |

### SHIPPING

Shipping Point:

Delaware City, Delaware  
El Dorado, Kansas

Method of Shipment:

Barge (Delaware City only)  
Tank Truck and Tank Car

D.O.T. Classification:

Toluene: Flammable Liquid, Flammable

Placard: Hazardous Material

I.D. No.: UN 1294

### TOXICITY

Threshold Limit Value:

200 ppm, OSHA Standard

CAS: 108-88-3

RTECS: XS5250000

EPA I.D. No: B719-5023

## TYPICAL ANALYSIS

| PROPERTY                                   | TYPICAL VALUES | ASTM TEST |
|--|----------------|-----------|
| Gravity                                    |                |           |
| API-60°F                                   | 30.9           | D891      |
| Specific-60°F                              | 0.871          | D891      |
| Pounds per Gallon                          |                |           |
| 60°F                                       | 7.26           | D850      |
| Distillation, °C                           |                |           |
| IBP  | 110.4          |           |
| 10%  | 110.5          |           |
| 50%  | 110.6          |           |
| 90%  | 110.7          |           |
| Dry Point                                  | 110.8          |           |
| Color (APHA)                               | 5              | D1209     |
| Aniline Pt. (Mixed), °F                    | 51             | D1012     |
| Kauri Butanol-No.                          | 105            | D1133     |
| Aromatic Content                           |                | D2600     |
| % Vol. Benzene                             | Nil            |           |
| Flash Point, °F                            | 35             | D56       |
| Corrosion, Cu Strip                        | 1A             | D849      |
| (3 hrs. at 122°F)                          |                |           |
| Sulfur as H <sub>2</sub> S/SO <sub>2</sub> | Free           | D853      |
| Paraffins, % Vol.                          | 0.2            | D2360     |
| Acid Wash Color                            | 0              | D848      |
| Acidity                                    | Negative       | D847      |
| Sulfur (Doctor Test)                       | Sweet          | D484      |

## SPECIFICATION

| PROPERTY   | LIMITS  | ASTM TEST |
|--|---|-----------|
| Gravity  |   |           |
| API-60°F   | 31.3-29.7   | D891      |
| Specific-60°F                                    | 0.869-0.873   | D891      |
| Pounds per gallon                                |   |           |
| 60°F   | 7.24-7.27   | D850      |
| Distillation, °C                                 |   |           |
| IBP  | Entire Range not more than 1.0°C including the Temp 110.6°C |           |
| Dry Point  |   |           |
| Color (APHA), Max.                               | 20  | D1209     |
| Kauri Butanol-No., Min.                          | 105   |           |
| Aromatic Content                                 |   |           |
| % Vol., Max. Benzene                             | 0.1   | D2600     |
| Corrosion, Cu Strip, Max.                        | 1B  | D849      |
| (3 hrs. at 122°F)                                |   |           |
| Sulfur as H <sub>2</sub> S, SO <sub>2</sub> Min. | Free  | D853      |
| Non aromatics, % Vol., Max.                      | 0.25  | D2600     |
| Acid Wash Color, Max.                            | 2   | D848      |
| Acidity, Min.                                    | Negative  | D847      |
| Sulfur (Doctor Test), Min.                       | Sweet   |           |
| Appearance, Min.                                 | Water White   |           |
| Toluene, Vol.% Min.                              | 99.8  | D2600     |

JS 016167

MKIL04414

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

## Section I

|  |  |
|--|--|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY                         |  |
| STREET ADDRESS<br>1437 SOUTH BOULDER, P.O. BOX 3000              |  |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102               |  |
| EMERGENCY TELEPHONE NO.<br>918/ 560-6192                         |  |
| CHEMICAL NAME AND SYNONYMS<br>Varnish Makers & Painter's Naphtha | TRADE NAME<br>Gettysolve V                             |
| CHEMICAL FAMILY<br>Aliphatic hydrocarbon                         | FORMULA<br>Mixed C <sub>8</sub> 's & C <sub>9</sub> 's |

## Section II — HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|--|---|----------------|-----------|---|----------------|
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

## Section III — PHYSICAL DATA

|                         |   |                                       |                |
|-------------------------|---|---------------------------------------|----------------|
| BOILING POINT (°F.)     | 240-290   | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 0.751 20/4 °C. |
| VAPOR PRESSURE (mm Hg.) | 23 mm @ 37.8 °C.                                | PERCENT VOLATILE BY VOLUME (%)        | >99.99         |
| VAPOR DENSITY (AIR=1)   | 4.00  | EVAPORATION RATE<br>(Ethyl Ether)     | 8.2            |
| SOLUBILITY IN WATER     | Insoluble                                       |                                       |                |
| APPEARANCE AND ODOR     | Water white liquid<br>with a sweet naphtha odor |                                       |                |

## Section IV — FIRE AND EXPLOSION HAZARD DATA

|   |                  |            |            |
|---|------------------|------------|------------|
| FLASH POINT (METHOD USED)<br>Tag, closed cup 50 °F.   | FLAMMABLE LIMITS | Lel<br>0.9 | Uel<br>6.0 |
| EXTINGUISHING MEDIA<br>Carbon dioxide, dry chemical, foam or other media for Class B fires. |                  |            |            |
| SPECIAL FIRE FIGHTING PROCEDURES  |                  |            |            |
|   |                  |            |            |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>Forms combustible and/or explosive mixtures with air. |                  |            |            |

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**Section V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE 500 ppm.

**EFFECTS OF OVEREXPOSURE**

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs.  
Liquid is harmful and/or fatal if swallowed.

**EMERGENCY AND FIRST AID PROCEDURES**

If overcome by vapors, remove victim from contaminated area. Keep victim warm and quiet.  
If breathing has stopped give artificial respiration. Call Physician immediately. If  
swallowed, do not induce vomiting. Avoid frequent and/or prolonged contact with skin.

**Section VI - REACTIVITY DATA**

|  |                |   |   |
|--|----------------|---|---|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID   |
|  | STABLE         | X | Stable under most conditions; forms combustible and/or explosive mixtures with air and/or oxygen. |
| INCOMPATIBILITY (Materials to avoid)                     |                |   |   |
| HAZARDOUS DECOMPOSITION PRODUCTS                         |                |   |   |
| None - combustion products are carbon dioxide and water. |                |   |   |
| HAZARDOUS<br>POLYMERIZATION                              | MAY OCCUR      |   | CONDITIONS TO AVOID   |
|  | WILL NOT OCCUR | X |   |

**Section VII - SPILL OR LEAK PROCEDURES****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Material is volatile and flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container or absorbed and removed from area. All sparks flames and ignition sources should be kept out of area. Use non-sparking tools. Avoid inhaling vapors.

WASTE DISPOSAL METHOD Incineration.

**Section VIII - PROTECTIVE INFORMATION****RESPIRATORY PROTECTION (Specify type)**

Self-contained or supply air masks for entering area of concentrated vapor.

|             |   |                                       |
|-------------|---|---------------------------------------|
| VENTILATION | LOCAL EXHAUST   | SPECIAL                               |
|             | Use in well ventilated area.<br>MECHANICAL (General)<br>Exhaust at floor level. | Vapors are heavier than air.<br>OTHER |

PROTECTIVE GLOVES Use rubber and/or plastic gloves.

EYE PROTECTION Keep liquid and vapor from eyes.

OTHER PROTECTIVE EQUIPMENT

**Section IX - SPECIAL PRECAUTIONS****PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Keep container closed. Do not store or use near heat, sparks or flame. Keep in cool dry place.

**OTHER PRECAUTIONS**

Use non-sparking tools. Ground all containers when transferring liquid. Avoid prolonged contact with liquid and/or vapor.

# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

NPVLA 6-70

| Section I   |  |
|---|--|
| MANUFACTURER'S NAME<br><b>GETTY OIL COMPANY</b>               |  |
| STREET ADDRESS<br><b>P. O. BOX 3000</b>                       |  |
| CITY, STATE AND ZIP CODE<br><b>TULSA, OKLAHOMA 74102</b>      |  |
| EMERGENCY TELEPHONE NO.<br><b>918-560-6192</b>                |  |
| CHEMICAL NAME AND SYNONYMS<br><b>Stove &amp; Lantern Fuel</b> | TRADE NAME<br><b>Skellite</b>                              |
| CHEMICAL FAMILY<br><b>Aliphatic</b>                           | FORMULA<br><b>Mixed C<sub>5</sub>'s - C<sub>10</sub>'s</b> |

| Section II - HAZARDOUS INGREDIENTS                         |   |                |           |   |                |
|--|---|----------------|-----------|---|----------------|
| PAINTS, PRESERVATIVES, & SOLVENTS N.A.                     |   |                |           |   |                |
| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
|  |   |                |           |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
|  |   |                |           |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

| Section III - PHYSICAL DATA |                                |                                       |             |
|-----------------------------|--------------------------------|---------------------------------------|-------------|
| BOILING POINT (°F.)         | 100 - 350                      | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 0.7138 20/4 |
| VAPOR PRESSURE (mm Hg.)     | 100 mm @ 2.8°C                 | PERCENT VOLATILE BY VOLUME (%)        | >99.99      |
| VAPOR DENSITY (AIR=1)       | 3.65                           | EVAPORATION RATE (Ethyl Ether)        | 4.0         |
| SOLUBILITY IN WATER         | Insoluble                      |                                       |             |
| APPEARANCE AND ODOR         | Water White Hydrocarbon        |                                       |             |
|                             | liquid with sweet naphtha odor |                                       |             |

| Section IV - FIRE AND EXPLOSION HAZARD DATA |  |                  |   |
|---|--|------------------|---|
| FLASH POINT (METHOD USED)                   | -14°F Closed Cup   | FLAMMABLE LIMITS | <div style="display: flex; justify-content: space-between;"> <span>LeI</span> <span>Uel</span> </div> <div style="display: flex; justify-content: space-between;"> <span>1.3</span> <span>6.0</span> </div> |
| EXTINGUISHING MEDIA                         | Carbon Dioxide, Dry Chemical, Foam or Other Media for Class B Fire |                  |   |
| SPECIAL FIRE FIGHTING PROCEDURES            | Treat as a gasoline fire   |                  |   |
| UNUSUAL FIRE AND EXPLOSION HAZARDS          | Forms combustible and explosive mixtures with air.                 |                  |   |

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**Section V - HEALTH HAZARD DATA**

|                                    |  |
|------------------------------------|--|
| THRESHOLD LIMIT VALUE              | 200 p.p.m.   |
| EFFECTS OF OVEREXPOSURE            | Narcosis with vapors; harmful or fatal if swallowed.   |
| EMERGENCY AND FIRST AID PROCEDURES | If overcome by vapors, remove victim from contaminated area; keep victim warm and quiet; if breathing has stopped, give artificial respiration. If swallowed do not induce vomiting, call physician immediately. |

**Section VI - REACTIVITY DATA**

|   |                |   |   |
|---|----------------|---|---|
| STABILITY   | UNSTABLE       |   | CONDITIONS TO AVOID                         |
|   | STABLE         | X | Reacts vigorously with oxidizing materials. |
| INCOMPATABILITY (Materials to avoid)  |                |   |   |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>None - combustion products are carbon dioxide and water |                |   |   |
| HAZARDOUS POLYMERIZATION  | MAY OCCUR      |   | CONDITIONS TO AVOID                         |
|   | WILL NOT OCCUR | X |   |

**Section VII - SPILL OR LEAK PROCEDURES**

|   |  |
|---|--|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED | Material is extremely flammable, and care should be exercised to prevent fire. Spilled material may be pumped into another container, or absorbed and removed from the area. All flames, sparks and ignition sources should be kept out of area non-sparking tools should be used; avoid inhaling vapors |
| WASTE DISPOSAL METHOD                                     | Incineration. - or dispose in accordance with local, State or Federal regulations.   |

**Section VIII - PERSONAL PROTECTION INFORMATION**

|  |  |         |
|--|--|---------|
| RESPIRATORY PROTECTION (Specify type)<br>Self-contained or supply air masks for entering area of concentrated vapor. |  |         |
| VENTILATION  | LOCAL EXHAUST  | SPECIAL |
|  | MECHANICAL (General)<br>Exhaust vapors from floor level.       | OTHER   |
| PROTECTIVE GLOVES<br>Avoid frequent or prolonged contact with skin.  | EYE PROTECTION<br>General - keep liquid and vapor out of eyes. |         |
| OTHER PROTECTIVE EQUIPMENT<br>Use rubber or plastic gloves. Eye bath and safety shower.                              |  |         |

**Section IX - SPECIAL PRECAUTIONS**

|   |   |
|---|---|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING | Keep container closed, do not store or use near heat, sparks or flame. Keep in cool, dry place with good ventilation.     |
| OTHER PRECAUTIONS                               | Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid. Use non-sparking tools. |

# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

NPVLA 6-70

## Section I

|   |   |
|---|---|
| MANUFACTURER'S NAME<br><b>GETTY OIL COMPANY</b>                 |   |
| STREET ADDRESS<br><b>1437 SOUTH BOULDER, P. O. BOX 3000</b>     |   |
| CITY, STATE, AND ZIP CODE<br><b>TULSA, OKLAHOMA 74102</b>       |   |
| EMERGENCY TELEPHONE NO.<br><b>918-560-6192</b>                  |   |
| CHEMICAL NAME AND SYNONYMS<br><b>High Flash Mineral Spirits</b> | TRADE NAME<br><b>Gettysolve S-1</b>                             |
| CHEMICAL FAMILY<br><b>Aliphatic hydrocarbon</b>                 | FORMULA<br><b>Mixed C<sub>10</sub>'s &amp; C<sub>11</sub>'s</b> |

## Section II — HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     |   |             |           | N.A. |             |
|---|---|-------------|-----------|------|-------------|
| PIGMENTS  | % | TLV (Units) | SOLVENTS  | %    | TLV (Units) |
|   |   |             |           |      |             |
| CATALYST  |   |             | ADDITIVES |      |             |
|   |   |             |           |      |             |
| VEHICLE   |   |             | OTHERS    |      |             |
|   |   |             |           |      |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |             |           | N.A. |             |
|   |   |             |           |      |             |
|   |   |             |           |      |             |
|   |   |             |           |      |             |
|   |   |             |           |      |             |
|   |   |             |           |      |             |

## Section III — PHYSICAL DATA

|                         |                                 |                                       |                       |
|-------------------------|---------------------------------|---------------------------------------|-----------------------|
| BOILING POINT (°F.)     | <b>330-380 °F.</b>              | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | <b>0.783 20/4 °C.</b> |
| VAPOR PRESSURE (mm Hg.) | <b>8 mm @ 49 °C.</b>            | PERCENT VOLATILE BY VOLUME (%)        | <b>&gt;99.99</b>      |
| VAPOR DENSITY (AIR=1)   | <b>4.97</b>                     | EVAPORATION RATE (Ethyl Ether)        | <b>70</b>             |
| SOLUBILITY IN WATER     | <b>Insoluble</b>                |                                       |                       |
| APPEARANCE AND ODOR     | <b>Water White liquid</b>       |                                       |                       |
|                         | <b>with sweet naphtha odor.</b> |                                       |                       |

## Section IV — FIRE AND EXPLOSION HAZARD DATA

|                                    |   |                  |            |            |
|------------------------------------|---|------------------|------------|------------|
| FLASH POINT (METHOD USED)          | <b>Tag, closed cup 116 °F.</b>  | FLAMMABLE LIMITS | <b>1.1</b> | <b>6.1</b> |
| EXTINGUISHING MEDIA                | <b>Carbon dioxide, dry chemical, foam or other media for Class B fires.</b> |                  |            |            |
| SPECIAL FIRE FIGHTING PROCEDURES   |   |                  |            |            |
| UNUSUAL FIRE AND EXPLOSION HAZARDS | <b>Forms combustible and/or explosive mixtures with air.</b>                |                  |            |            |

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**Section V — HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE 500 ppm

## EFFECTS OF OVEREXPOSURE

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs.  
Liquid is harmful and/or fatal if swallowed.

## EMERGENCY AND FIRST AID PROCEDURES

If overcome by vapors, remove victim from contaminated area. Keep victim warm and quiet.  
If breathing has stopped give artificial respiration. Call Physician immediately. If  
swallowed, do not induce vomiting. Avoid frequent and/or prolonged contact with skin.

**Section VI — REACTIVITY DATA**

|           |          |   |   |
|-----------|----------|---|---|
| STABILITY | UNSTABLE |   | CONDITIONS TO AVOID   |
|           | STABLE   | X | Stable under most conditions; forms combustible and/or explosive mixtures with air and/or oxygen. |

## INCOMPATIBILITY (Materials to avoid)

## HAZARDOUS DECOMPOSITION PRODUCTS

None - combustion products are carbon dioxide and water.

HAZARDOUS  
POLYMERIZATION

## MAY OCCUR

## WILL NOT OCCUR

X

## CONDITIONS TO AVOID

**Section VII — SPILL OR LEAK PROCEDURES**

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is volatile and flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container or absorbed and removed from area. All sparks and flames and ignition sources should be kept out of area. Use non-sparking tools. Avoid inhaling vapors.

## WASTE DISPOSAL METHOD

Incineration.

**Section VIII — SPECIAL PROTECTION INFORMATION**

## RESPIRATORY PROTECTION (Specify type)

Self-contained or supply air masks for entering area of concentrated vapor

## VENTILATION

## LOCAL EXHAUST

Use in well ventilated area.

## MECHANICAL (General)

Exhaust at floor level.

## SPECIAL

Vapors are heavier than air.

## OTHER

## PROTECTIVE GLOVES

Use rubber and/or plastic gloves.

## EYE PROTECTION

Keep liquid and vapor from eyes.

## OTHER PROTECTIVE EQUIPMENT

**Section IX — SPECIAL PRECAUTIONS**

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed. Do not store or use near heat, sparks or flame. Keep in cool dry place.

## OTHER PRECAUTIONS

Use non-sparking tools. Ground all containers when transferring liquid. Avoid prolonged contact with liquid and/or vapor.

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

| Section I  |  |             |   |                |             |
|--|--|-------------|---|----------------|-------------|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY                   |  |             |   |                |             |
| STREET ADDRESS<br>1437 SOUTH BOULDER, P. O. BOX 3000       |  |             |   |                |             |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102         |  |             |   |                |             |
| EMERGENCY TELEPHONE NO.<br>918/560-6192                    |  |             |   |                |             |
| CHEMICAL NAME AND SYNONYMS<br>Quick Dry Mineral Spirits    |  |             | TRADE NAME<br>Gettysolve S-2                              |                |             |
| CHEMICAL FAMILY<br>Aliphatic Hydrocarbon                   |  |             | FORMULA<br>Mixed C <sub>9</sub> 's and C <sub>10</sub> 's |                |             |
| Section II — HAZARDOUS INGREDIENTS                         |  |             |   |                |             |
| PAINTS, PRESERVATIVES, & SOLVENTS N.A.                     |  |             |   |                |             |
| PIGMENTS   | %  | TLV (Units) | SOLVENTS  | %              | TLV (Units) |
|  |  |             |   |                |             |
| CATALYST   |  |             | ADDITIVES   |                |             |
|  |  |             |   |                |             |
| VEHICLE  |  |             | OTHERS  |                |             |
|  |  |             |   |                |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |  |             |   | %              | TLV (Units) |
|  |  |             |   |                |             |
|  |  |             |   |                |             |
|  |  |             |   |                |             |
|  |  |             |   |                |             |
|  |  |             |   |                |             |
| Section III — PHYSICAL DATA                                |  |             |   |                |             |
| BOILING POINT (°F.)  | 305-335  |             | SPECIFIC GRAVITY (H <sub>2</sub> O=1)                     | 0.774 20/4 °C. |             |
| VAPOR PRESSURE (mm Hg.)                                    | 8 mm @ 37.8 °C.  |             | PERCENT VOLATILE BY VOLUME (%)                            | >99.99         |             |
| VAPOR DENSITY (AIR=1)                                      | 4.73   |             | EVAPORATION RATE (Ethyl Ether)                            | 28             |             |
| SOLUBILITY IN WATER  | Insoluble  |             |   |                |             |
| APPEARANCE AND ODOR  | Water white liquid having sweet naphtha odor.                        |             |   |                |             |
|  |  |             |   |                |             |
| Section IV — FIRE AND EXPLOSION HAZARD DATA                |  |             |   |                |             |
| FLASH POINT (METHOD USED)                                  | Tag. Closed Cup 100 °F.  |             | FLAMMABLE LIMITS  | LeI            | UeI         |
|  |  |             |   | 1.1            | 6.1         |
| EXTINGUISHING MEDIA  | Carbon dioxide, dry chemical, foam or other media for Class B fires. |             |   |                |             |
| SPECIAL FIRE FIGHTING PROCEDURES                           |  |             |   |                |             |
|  |  |             |   |                |             |
| UNUSUAL FIRE AND EXPLOSION HAZARDS                         |  |             |   |                |             |
| Forms combustible and/or explosive mixtures with air.      |  |             |   |                |             |

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**Section V - HEALTH HAZARD DATA**

|                                    |   |
|------------------------------------|---|
| THRESHOLD LIMIT VALUE              | 500 ppm   |
| EFFECTS OF OVEREXPOSURE            | Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs. Liquid is harmful and/or fatal if swallowed.  |
| EMERGENCY AND FIRST AID PROCEDURES | If overcome by vapors, remove victim from contaminated area. Keep victim warm and quiet. If breathing has stopped give artificial respiration. Call Physician immediately. If swallowed, do not induce vomiting. Avoid frequent and/or prolonged contact with skin. |

**Section VI - REACTIVITY DATA**

|  |                |   |   |
|--|----------------|---|---|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID   |
|  | STABLE         | X | Stable under most conditions; forms combustible and/or explosive mixtures with air and/or oxygen. |
| INCOMPATIBILITY (Materials to avoid)   |                |   |   |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>None - combustion products are carbon dioxide and water. |                |   |   |
| HAZARDOUS POLYMERIZATION   | MAY OCCUR      |   | CONDITIONS TO AVOID   |
|  | WILL NOT OCCUR | X |   |

**Section VII - SPILL OR LEAK PROCEDURES**

|   |   |
|---|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED | Material is volatile and flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container or absorbed and removed from area. All sparks flames and ignition sources should be kept out of area. Use non-sparking tools. Avoid inhaling vapors. |
| WASTE DISPOSAL METHOD                                     | Incineration.   |

**Section VIII - SPECIAL PROTECTION INFORMATION**

|  |  |   |
|--|--|---|
| RESPIRATORY PROTECTION (Specify type)<br>Self-contained or supply air masks for entering area of concentrated vapor. |  |   |
| VENTILATION  | LOCAL EXHAUST<br>Use in well ventilated area.      | SPECIAL<br>Vapors are heavier than air. |
|  | MECHANICAL (General)<br>Exhaust at floor level.    | OTHER                                   |
| PROTECTIVE GLOVES<br>Use rubber and/or plastic gloves.   | EYE PROTECTION<br>Keep liquid and vapor from eyes. |   |
| OTHER PROTECTIVE EQUIPMENT   |  |   |

**Section IX - SPECIAL PRECAUTIONS**

|   |  |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING | Keep container closed. Do not store or use near heat, sparks or flame. Keep in cool dry place.                             |
| OTHER PRECAUTIONS                               | Ground all containers when transferring liquid. Avoid prolonged contact with liquid and/or vapors. Use non-sparking tools. |

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

## Section I

|   |                            |
|---|----------------------------|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY            |                            |
| STREET ADDRESS<br>1437 SOUTH BOULDER, P.O. BOX 3000 |                            |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102  |                            |
| EMERGENCY TELEPHONE NO.<br>918/560-6192             |                            |
| CHEMICAL NAME AND SYNONYMS<br>COMMERCIAL HEXANE     | TRADE NAME<br>Gettysolve B |
| CHEMICAL FAMILY<br>ALIPHATIC HYDROCARBON            | FORMULA<br>$C_6H_{14}$     |

## Section II — HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|--|---|----------------|-----------|---|----------------|
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

## Section III — PHYSICAL DATA

|                         |  |                                   |                          |
|-------------------------|--|-----------------------------------|--------------------------|
| BOILING POINT (°F.)     | 151-157  | SPECIFIC GRAVITY ( $H_2O=1$ )     | 0.6742 $20/4^{\circ}C$ . |
| VAPOR PRESSURE (mm Hg.) | 100 mm @ $15.8^{\circ}C$ .                     | PERCENT VOLATILE BY VOLUME (%)    | >99.99                   |
| VAPOR DENSITY (AIR=1)   | 2.97   | EVAPORATION RATE<br>(Ethyl ether) | 1.3                      |
| SOLUBILITY IN WATER     | Insoluble                                      |                                   |                          |
| APPEARANCE AND ODOR     | Water white liquid<br>having a mild sweet odor |                                   |                          |

## Section IV — FIRE AND EXPLOSION HAZARD DATA

|   |                  |            |            |
|---|------------------|------------|------------|
| FLASH POINT (METHOD USED)<br>Tag. closed cup $-25^{\circ}F$ .                               | FLAMMABLE LIMITS | Lel<br>1.1 | Uel<br>7.5 |
| EXTINGUISHING MEDIA<br>Carbon dioxide, dry chemical, foam or other media for Class B fire.  |                  |            |            |
| SPECIAL FIRE FIGHTING PROCEDURES  |                  |            |            |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>Forms combustible and/or explosive mixtures with air. |                  |            |            |

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### Section V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

500 ppm

**EFFECTS OF OVEREXPOSURE**

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs. Liquid is harmful and/or fatal if swallowed.

**EMERGENCY AND FIRST AID PROCEDURES**

If overcome by vapors remove victim from contaminated area; keep victim warm and quiet. Call Physician immediately. If breathing has stopped, give artificial respiration. If swallowed, do not induce vomiting. Avoid frequent and prolonged contact with skin.

### Section VI - REACTIVITY DATA

STABILITY

UNSTABLE

STABLE

X

CONDITIONS TO AVOID

Stable under most conditions; forms combustible and explosive mixtures with air and/or oxygen.

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

None - combustion products are carbon dioxide and water.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

### Section VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is very volatile and highly flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container, or absorbed and removed from the area. All flames, sparks and ignition sources should be kept out of area; non-sparking tools used. Avoid inhaling vapors.

WASTE DISPOSAL METHOD

Incineration.

### Section VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Self contained or supply air masks for entering area of concentrated vapor.

VENTILATION

LOCAL EXHAUST

Use in well ventilated area.

MECHANICAL (General)

Exhaust vapors from floor level.

SPECIAL

Vapors are heavier than air.

OTHER

PROTECTIVE GLOVES

Use rubber and/or plastic gloves.

EYE PROTECTION

General - keep liquid and vapor out of eyes.

OTHER PROTECTIVE EQUIPMENT

### Section IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed; do not store or use near heat, sparks or flame. Keep in a cool dry place with good ventilation.

OTHER PRECAUTIONS

Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid. Use non-sparking tools.

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-009-4)

## Section I

|  |   |
|--|---|
| MANUFACTURER'S NAME<br>GETTY OIL COMPANY           |   |
| STREET ADDRESS<br>P. O. BOX 3000                   |   |
| CITY, STATE, AND ZIP CODE<br>TULSA, OKLAHOMA 74102 |   |
| EMERGENCY TELEPHONE NO.<br>918-560-6192            |   |
| CHEMICAL NAME AND SYNONYMS<br>COMMERCIAL HEPTANE   | TRADE NAME<br>Gettysolve C                |
| CHEMICAL FAMILY<br>ALIPHATIC HYDROCARBON           | FORMULA<br>C <sub>7</sub> H <sub>16</sub> |

## Section II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, &amp; SOLVENTS N.A.

| PIGMENTS   | % | TLV<br>(Units) | SOLVENTS  | % | TLV<br>(Units) |
|--|---|----------------|-----------|---|----------------|
|  |   |                |           |   |                |
| CATALYST   |   |                | ADDITIVES |   |                |
| VEHICLE  |   |                | OTHERS    |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES N.A. |   |                |           | % | TLV<br>(Units) |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |
|  |   |                |           |   |                |

## Section III - PHYSICAL DATA

|                         |   |                                       |               |
|-------------------------|---|---------------------------------------|---------------|
| BOILING POINT (°F.)     | 190-210   | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 0.719 20/4°C. |
| VAPOR PRESSURE (mm Hg.) | 100 mm @ 41.8°C.                                | PERCENT VOLATILE BY VOLUME (%)        | >99.99        |
| VAPOR DENSITY (AIR=1)   | 3.45  | EVAPORATION RATE<br>(... Ethyl Ether) | 2.3           |
| SOLUBILITY IN WATER     | Insoluble-                                      |                                       |               |
| APPEARANCE AND ODOR     | Water white liquid with<br>a sweet naphtha odor |                                       |               |

## Section IV - FIRE AND EXPLOSION HAZARD DATA

|   |                  |     |     |
|---|------------------|-----|-----|
| FLASH POINT (METHOD USED)<br>Tag. closed cup 13°F.  | FLAMMABLE LIMITS | LeI | Uel |
|   |                  | 1.2 | 6.7 |
| EXTINGUISHING MEDIA<br>Carbon dioxide, dry chemical foam or other media for Class B fire. |                  |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES  |                  |     |     |

UNUSUAL FIRE AND EXPLOSION HAZARDS  
Forms combustible and explosive mixtures with air.

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JS 016137

**Section V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

500 ppm

EFFECTS OF OVEREXPOSURE

Vapors are intoxicating and narcotic and are irritating to the mucous membranes of the lungs. Liquid is harmful and/or fatal if swallowed.

EMERGENCY AND FIRST AID PROCEDURES

If overcome by vapors remove victim from contaminated area; keep victim warm and quiet. Call Physician immediately. If breathing has stopped, give artificial respiration. If swallowed, do not induce vomiting. Avoid frequent and prolonged contact with skin.

**Section VI - REACTIVITY DATA**

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

Stable under most conditions; forms combustible and explosive mixtures with air and/or oxygen.

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

None - combustion products are carbon dioxide and water.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

**Section VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Material is very volatile and highly flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container, or absorbed and removed from the area. All flames, sparks and ignition sources should be kept out of area; non-sparking tools used.

Avoid inhaling vapors.

WASTE DISPOSAL METHOD

Incineration.

**Section VIII - PROTECTIVE INFORMATION**

Self-contained or supply air masks for entering area of concentrated vapor.

VENTILATION

LOCAL EXHAUST

SPECIAL

Use in well ventilated area.

Vapors are heavier than air.

MECHANICAL (General)

OTHER

Exhaust vapors from floor level.

PROTECTIVE GLOVES

EYE PROTECTION

Use rubber and/or plastic gloves.

General - keep liquid and vapor out of eyes.

OTHER PROTECTIVE EQUIPMENT

**Section IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep container closed; do not store or use near heat, sparks or flame. Keep in a cool dry place with good ventilation.

OTHER PRECAUTIONS

Avoid prolonged contact with liquid and/or vapor. Ground all containers when transferring liquid. Use non-sparking tools.

# MATERIAL SAFETY DATA SHEET

NPVLA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

| Section I   |  |                |  |                       |                |
|---|--|----------------|--|-----------------------|----------------|
| MANUFACTURER'S NAME<br><b>GETTY OIL COMPANY</b>                   |  |                |  |                       |                |
| STREET ADDRESS<br><b>P. O. Box 3000 1437 South Boulder</b>        |  |                |  |                       |                |
| CITY, STATE, AND ZIP CODE<br><b>Tulsa, Oklahoma 74102</b>         |  |                |  |                       |                |
| EMERGENCY TELEPHONE NO<br><b>918-560-6192</b>                     |  |                |  |                       |                |
| CHEMICAL NAME AND SYNONYMS<br><b>MINERAL SPIRITS</b>              |  |                | TRADE NAME<br><b>Gettysolve S &amp; S-66</b>                                   |                       |                |
| CHEMICAL FAMILY<br><b>ALIPHATIC HYDROCARBON</b>                   |  |                | FORMULA<br><b>MIXED C<sub>9</sub>'s, C<sub>10</sub>'s and C<sub>11</sub>'s</b> |                       |                |
| Section II — HAZARDOUS INGREDIENTS                                |  |                |  |                       |                |
| PAINTS, PRESERVATIVES, & SOLVENTS <b>N.A.</b>                     |  |                |  |                       |                |
| PIGMENTS  | %  | TLV<br>(Units) | SOLVENTS   | %                     | TLV<br>(Units) |
|   |  |                |  |                       |                |
| CATALYST  |  |                | ADDITIVES  |                       |                |
|   |  |                |  |                       |                |
| VEHICLE   |  |                | OTHERS   |                       |                |
|   |  |                |  |                       |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES <b>N.A.</b> |  |                |  | %                     | TLV<br>(Units) |
|   |  |                |  |                       |                |
|   |  |                |  |                       |                |
|   |  |                |  |                       |                |
|   |  |                |  |                       |                |
|   |  |                |  |                       |                |
| Section III — PHYSICAL DATA                                       |  |                |  |                       |                |
| BOILING POINT (°F.)   | <b>305-395</b>   |                | SPECIFIC GRAVITY (H <sub>2</sub> O=1)  | <b>0.776 20/4 °C.</b> |                |
| VAPOR PRESSURE (mm Hg)  | <b>5 mm @ 37.8°C.</b>  |                | PERCENT VOLATILE BY VOLUME (%)   | <b>&gt;99.99</b>      |                |
| VAPOR DENSITY (AIR=1)   | <b>4.83</b>  |                | EVAPORATION RATE (Ethyl Ether)   | <b>41</b>             |                |
| SOLUBILITY IN WATER   | <b>Insoluble</b>   |                |  |                       |                |
| APPEARANCE AND ODOR   | <b>Water White Liquid</b>  |                |  |                       |                |
|   | <b>Having a mild sweet</b>   |                | <b>naphtha odor</b>  |                       |                |
| Section IV — FIRE AND EXPLOSION HAZARD DATA                       |  |                |  |                       |                |
| FLASH POINT (METHOD USED)   | <b>105 °F. closed cup</b>  |                | FLAMMABLE LIMITS   | Lel                   | Uel            |
|   |  |                |  | <b>1.1</b>            | <b>6.1</b>     |
| EXTINGUISHING MEDIA   | <b>CARBON DIOXIDE, DRY CHEMICAL, FOAM OR OTHER MEDIA FOR CLASS B FIRE.</b> |                |  |                       |                |
| SPECIAL FIRE FIGHTING PROCEDURES                                  |  |                |  |                       |                |
|   |  |                |  |                       |                |
| UNUSUAL FIRE AND EXPLOSION HAZARDS                                |  |                |  |                       |                |

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**Section V—HEALTH HAZARD DATA**

|   |         |
|---|---------|
| THRESHOLD LIMIT VALUE   | 200 ppm |
| EFFECTS OF OVEREXPOSURE<br>Vapors are intoxicating and narcotic and are irritating to mucous membranes of lungs.<br>Liquid is harmful and/or fatal if swallowed.  |         |
| EMERGENCY AND FIRST AID PROCEDURES<br>If overcome by vapors, remove victim from contaminated area. Keep victim warm and quiet.<br>If breathing has stopped, give artificial respiration. If swallowed do not induce vomiting.<br>Call Physician immediately. Avoid frequent and/or prolonged contact with skin. |         |

**Section VI—REACTIVITY DATA**

|  |                |   |  |
|--|----------------|---|--|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID  |
|  | STABLE         | X | Stable under most conditions, forms explosive and combustible mixtures with air or oxygen. |
| INCOMPATIBILITY (Materials to avoid)   |                |   |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>None - combustion products are carbon dioxide and water. |                |   |  |
| HAZARDOUS POLYMERIZATION   | MAY OCCUR      |   | CONDITIONS TO AVOID  |
|  | WILL NOT OCCUR | X |  |

**Section VII—SPILL OR LEAK PROCEDURES**

|   |
|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED<br>Material is flammable and care should be exercised to prevent fire. Spilled material may be pumped into another container, or absorbed and removed from the area. All sparks, flames and ignition sources should be kept out of area. Non-sparking tools should be used. |
| WASTE DISPOSAL METHOD<br>Incineration   |

**Section VIII—SPECIAL PROTECTION INFORMATION**

|  |  |                                    |
|--|--|------------------------------------|
| RESPIRATORY PROTECTION (Specify type)<br>Self contained or supply air masks for entering area of concentrated vapor. |  |                                    |
| VENTILATION  | LOCAL EXHAUST<br>Use in well ventilated area.              | SPECIAL<br>Vapors heavier than air |
|  | MECHANICAL (General)<br>Mechanical exhaust at floor level. | OTHER                              |
| PROTECTIVE GLOVES<br>Use rubber and/or plastic gloves  | EYE PROTECTION<br>Keep liquid and vapor out of eyes.       |                                    |
| OTHER PROTECTIVE EQUIPMENT   |  |                                    |

**Section IX—SPECIAL PRECAUTIONS**

|  |
|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING<br>Keep container closed. Do not store or use near heat, sparks or flame.<br>Keep in a cool dry place. |
| OTHER PRECAUTIONS<br>Ground all containers when transferring liquid. Avoid prolonged contact with liquid and/or vapor. Use non-sparking tools.         |



# Grain Processing Corporation

## MATERIAL SAFETY DATA SHEET

Based on Form OSHA 20

Date: 3/23/84

### SECTION I

Product Name: GPC Anhydrous Fuel Alcohol  
Chemical Name: -----  
Formula: Mixture  
Manufacturer: Grain Processing Corporation  
Address: P.O. Box 349, 1600 Oregon Street, Muscatine, Iowa 52761  
24-Hour Emergency Assistance: Grain Processing Corporation (319) 264-4211  
Chemtrec (800) 424-9300

### SECTION II Hazardous Ingredients of Mixtures

| Principal Hazardous Component(s): | Wt./Wt. Basis | %     | TLV (Units) |
|-----------------------------------|---------------|-------|-------------|
| Ethyl Alcohol                     |               | 95.23 | 1,000 PPM   |
| Unleaded Gasoline                 |               | 4.76  | --          |

### SECTION III Physical Data

Boiling Point (°F.): 173.1 (For Ethyl Alcohol)      Specific Gravity (H<sub>2</sub>O=1): 0.7932 @ 60°F./60°F.  
Vapor Pressure (mm Hg): 40 (@ 20°C. For Ethyl Alcohol)      Percent Volatile By Volume (%): 100  
Vapor Density (Air=1): 1.6      Evaporation Rate (n-butyl acetate=1): 1.9  
Solubility in Water: Infinite  
Appearance and Odor: Colorless, clear liquid, with mild non-residual odor.

### SECTION IV Fire and Explosion Hazard Data

Flash Point (Method Used): 49°F. (Tag open cup ASTM D-1310)      Flammable Limits: Lel 3.3% Uel 19.0%  
(For Ethyl Alcohol)  
Extinguishing Media: Carbon dioxide, water, foam, or dry chemical.  
Special Fire Fighting Procedures: Approved respirators should be worn. Use water spray to cool equipment and to disperse vapors.  
Unusual Fire and Explosion Hazards: Alcohol flames may be difficult to see because they are virtually colorless.

### SECTION V Health Hazard Data

Threshold Limit Value: Not established, see Section II.  
Effects of Overexposure: Eye irritation, mucous membrane and upper respiratory tract irritation. Breathing vapors may cause drowsiness.  
Emergency and First Aid Procedures: Eye contact: Irrigate immediately with water and get medical attention. Ingestion: Induce vomiting and get medical attention. Inhalation: Remove from exposure and get medical attention.

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## SECTION VI Reactivity Data

Stability: Unstable: Stable: X Conditions to Avoid: Not applicable.

Incompatibility (Materials to Avoid): Oxidizing materials can cause a vigorous reaction.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, and various hydrocarbons and hydrocarbon derivatives.

Hazardous Polymerization: May Occur: Will Not Occur: X

Conditions to Avoid: Not applicable.

## SECTION VII Spill or Leak Procedures

**Steps To Be Taken In Case Material Is Released Or Spilled:** Eliminate all ignition sources.  
Flush spill away with water spray.

**Waste Disposal Method:** Controlled incineration; consult local ordinances for compliance.

## SECTION VIII Special Protection Information

Respiratory Protection (Specify Type): A MESA-NIOSH approved organic vapor respirator if needed.

Ventilation: Local Exhaust: If heated or used in enclosed area. Special: None known to Grain Processing Corporation  
Mechanical (General): Recommended. Other: None known to Grain Processing Corporation

Protective Gloves: Not required, but should be worn. Eye Protection: Safety glasses required.

Other Protective Equipment: Eye bath washing facilities.

## SECTION IX Special Precautions

**Precautions To Be Taken In Handling and Storing:** Flammable liquid. Store in flammable liquids storage area, keep away from heat, sparks, and open flame. Avoid eye and skin contact. Avoid inhalation of vapors.

**Other Precautions:** The Bureau of Alcohol, Tobacco, and Firearms (Dept. of the Treasury) regulates the production, procurement, storage, and use of ethyl alcohol products. All uses must comply with these regulations.

## SECTION X Transportation

Department of Transportation - Classification: Flammable liquid.  
Department of Transportation - Identification Number: UN 1986.

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees.

GPC-MSDS 3-84

JS 016122

MKIL04369

HARSHAW/FILTROL  
MATERIAL SAFETY DATA SHEET

CODE: 424-005

PRODUCT NAME  
Potassium Fluoborate  
Spec. 102

DATE: 06/28/84

H-33-84-WP

SECTION I -- IDENTIFICATION

SUPPLIER'S NAME Harshaw/Filtrol Partnership

EMERGENCY TELEPHONE 216/292-9200

ADDRESS 30100 Chagrin Blvd.  
Cleveland, Ohio 44124

CHEMICAL NAME Potassium Fluoborate

CAS No. 14075-53-7

U.N. No. Not applicable

FORMULA KBF(4)

D.O.T. CLASSIFICATION Not regulated

SECTION II -- HAZARDOUS INGREDIENTS OF MIXTURES

| Material or Component | % | Threshold Limit Value |
|-----------------------|---|-----------------------|
| Not applicable        |   |                       |

SECTION III -- PHYSICAL DATA

BOILING POINT Decomp.ca 900°C

MELTING POINT 529.5°C

SPECIFIC GRAVITY (H<sub>2</sub>O=1) 2.5

VAPOR PRESSURE Not applicable

VAPOR DENSITY (Air=1) Not applicable

SOLUBILITY IN H<sub>2</sub>O (% by Wt.) 0.45g/100g  
@ 20°C

% VOLATILES BY VOLUME Not applicable

EVAPORATION RATE (Butyl Acetate=1)  
Not applicable

APPEARANCE AND ODOR Fine, white crystals; odorless

SECTION IV -- FIRE AND EXPLOSION DATA

Not a fire or explosion hazard.

SECTION V -- HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

2.5 mg/m<sup>3</sup> as fluoride (F)-TWA (ACGIH, 1984); this TLV may not be applicable as the fluorine is chemically bound to boron. A study of fluoborate ingestion indicates no fluoride accumulation in the body.

EFFECTS OF OVEREXPOSURE

Eye and skin contact may cause mild irritation.

Inhalation: Prolonged or excessive inhalation may cause irritation.

EMERGENCY AND FIRST AID PROCEDURES

Eye and Skin contact: Immediately flush eyes with water to remove particles. Call a physician if irritation develops. Wash skin with soap and water.

Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. Call a physician.

APP - r

McGraw-Hill

JS 030670

MKIL05062

== DATE: 06/28/84 == SECTION VI -- REACTIVITY DATA == CODE: 424-005 ==

CONDITIONS CONTRIBUTING TO INSTABILITY None expected

INCOMPATIBILITY None expected

HAZARDOUS DECOMPOSITION PRODUCTS None expected.

== SECTION VII -- SPILL OR LEAK PROCEDURES ==

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Immediately scoop up or vacuum spillage. Avoid dusting. Depending on the quantity spilled, notification of the National Response Center (800/424-8802) may be required in the case of hazardous substances. (See EPA, DOT and various state and local regulations.)

We recommend that the purchaser establish a spill prevention, control and countermeasure plan. This plan should include procedures for proper storage as well as clean-up of spills and leaks. The procedures should conform to safe practices and provide for proper recovery or disposal.

WASTE DISPOSAL METHOD Dispose of in accordance with Federal, state and local laws. Testing may be required to determine hazard status under these laws and regulations.

== SECTION VIII -- PROTECTIVE EQUIPMENT ==

VENTILATION General; local exhaust ventilation as necessary to control dust.

PERSONAL PROTECTIVE EQUIPMENT  
Chemical goggles.  
Gloves  
A NIOSH/MSHA approved respirator as necessary

== SECTION IX -- SPECIAL PRECAUTIONS ==

Avoid breathing dust.  
Keep container closed.

== SECTION X -- PERSONNEL SAMPLING PROCEDURE ==

For Fluoride: Refer to NIOSH Manual of Analytical Methods, 3rd Edition, Volume 1, Method 7902.

Information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgement.

DATE: 06/28/84

CODE: 424-005

PRODUCT: Potassium Fluoborate Spec. 102

JS 030671

MKIL05063

# MATERIAL SAFETY DATA SHEET

000691



ICI Americas Inc.

Wilmington, Delaware 19897

Phone (302) 575-3000 (24 hours)

Form No.: M3590-C

Date: 1/83

## SECTION 1 NAME & PRODUCT

Material name:

Glycol Ether EM (Ethylene glycol monomethyl ether, EM, 2-Methoxyethanol)

Formula of primary component(s):

CH<sub>3</sub>OCH<sub>2</sub>CH<sub>2</sub>OH CAS 109-86-4

## SECTION 2 INGREDIENTS

Ethylene glycol monomethyl ether

TLV (ACGIH)

5 ppm skin\*

\*1982 ACGIH TLV Tables - Notice of Intended Changes.

OSHA TLV 25 ppm (skin)

Not specification values. gt = greater than, lt = less than, ca = approximately

## SECTION 3 PHYSICAL DATA

Boiling point: 255.6°F (124.2°C)

Vapor pressure (mmHg at 20°C): 7.3

Vapor density (air = 1): 2.6

Solubility in water: Completely miscible.

Specific gravity: 0.964-0.967 20/20°C

% Volatile by volume: 100

Appearance and odor: Clear liquid, mild agreeable odor

## SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point (and method):

107°F (Closed Cup) or 41.7°C

Flammable limits (STP):

LEL: 1.8% UEL: 14.0%

Extinguishing media:

Water fog, alconol foam, CO<sub>2</sub>, dry chemical, Halon 1211. Do not use water stream.

Special fire fighting protective equipment:

Self-contained breathing apparatus and full protective clothing.

Unusual fire and explosion hazards:

Note flammable limits above. Product is a Class II combustible liquid.

## SECTION 5 REACTIVITY DATA

Stability:

Stable. Will ignite in air at 545°F (285°C).

Incompatibility (materials to avoid):

Strong oxidizing material. Avoid use of aluminum equipment.

Hazardous decomposition products:

Thermal decomposition products include: CO, CO<sub>2</sub>

Hazardous polymerization:

Will not occur.

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MKIL02521

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SECTION 6 HEALTH HAZARD ASSESSMENT

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## Oral ingestion:

Rat acute oral LD<sub>50</sub> is 2460 mg/Kg. This compound is probably slightly toxic to humans if ingested.

---

Eye contact:

Slight irritant to rabbit eyes; eye contact induces immediate pain. This material probably does not present a serious hazard to human eyes though contact may induce pain and discomfort.

---

Skin contact:

Slight irritant to rabbit skin. This compound may be slightly irritating to human skin.

---

Skin absorption:

Rabbit dermal LD<sub>50</sub> is 2.0 g/kg. This compound is readily absorbed through the skin. Upon acute skin exposure, this compound is potentially slightly toxic systemically to humans. Repeated skin exposure may lead to more extensive systemic toxicity.

---

Inhalation:

The lethal concentration in air for mice exposed for 4 hours is 1500 ppm. Relative to other compounds EM is slightly toxic by the inhalation route upon acute exposure.

---

Other Comments:

Very significant systemic toxic effects occur after repeated inhalation of low concentrations (50 ppm).

Animal studies have shown that this material can induce malformed offspring, morphological changes in the testes and functional reproductive impairment. Selected animal studies are described below which support this assessment. More studies are available which confirm these results in other species, by other routes of administration and under more severe conditions of exposure.

Major malformations of the cardiovascular, urogenital and skeletal system were observed in fetal rabbits whose dams were exposed by inhalation to 50 ppm of EM vapor, 6 hours per day on days 6 through 18 of gestation. No malformed offspring were observed where the exposure concentration was 10 or 3 ppm.

Male rats and rabbits were exposed to EM vapor at 30, 100 or 300 ppm, 6 hours per day, 5 days per week for 13 weeks. Rabbits showed dose-related decreased testicular size and microscopic evidence of testicular lesion. The 30 ppm EM vapor concentration was subsequently tested again along with 10 and 3 ppm. No testicular effects were seen in the latter study. Upon completion of the exposure phase of the initial study, selected rats were mated to unexposed rats. Male rats exposed to 300 ppm were infertile. There was no effect on female rats exposed to 300 ppm nor on male and female rats exposed to 100 or 30 ppm.

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Effects of overexposure:

Eye and mucous membrane irritation, headache, dizziness, blurred vision, drowsiness, defective muscle control, tremors and anemia.

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MKIL02522

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SECTION 6 HEALTH HAZARD ASSESSMENT (continued)

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## First aid procedures:

Eyes: Immediately flush with plenty of water for at least 15 minutes and call a physician.

Skin: Flush with plenty of water. If redness, itching or a burning sensation develops, get medical attention. Remove contaminated clothing. Wash clothing and decontaminate shoes before reuse.

Ingestion: Immediately induce vomiting by giving one or two glasses of water to drink and sticking finger down throat. Call a physician.

Inhalation: Remove to fresh air, and if not breathing, give artificial respiration, preferably mouth-to-mouth. Call a physician.

---

SECTION 7 SPILL OR LEAK PROCEDURES

---

## Steps to be taken in case material is released or spilled:

Cut off any source of ignition and ventilate spill area. Wear eye protection, protective clothing and respiratory protection during cleanup. Soak up chemical with an inert absorbent and shovel into waste container. Cover and remove container from work area.

## Disposal method:

Because of flashpoint below 140°F, disposal of this product as a waste is subject to regulations under RCRA, 40 CFR, 261.21. The hazardous waste number is D001. Dispose of waste material by incineration or landfilling, using facilities permitted for hazardous waste.

Container disposal: Do not distribute, make available, furnish or reuse empty container except for storage or shipment of original product. Triple rinse (or equivalent) empty container and dispose of container either through an approved drum reclaimer, or puncture or crush container and dispose of in a permitted landfill for nonhazardous waste.

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SECTION 8 SPECIAL PROTECTION INFORMATION

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## TLV® or suggested control figure:

1982 ACGIH TLV® Tables - Notice of Intended Changes: 5 ppm-skin. Recent animal data indicate that repeated exposure to ethylene glycol monomethyl ether (EM) has produced adverse effects including testicular lesions, embryotoxic and teratogenic effects. The current TLV® of 25 ppm-skin for EM does not take these recent findings into account and may therefore not provide an adequate margin of safety for exposure to EM. The 1982 American Conference of Governmental Industrial Hygienists Notice of Intended Change to 5 ppm-skin is consistent with our previous recommendation to control exposure to low single figure ppm levels. This compound should be handled with particular care and should be used only in well ventilated areas with precautions taken to reduce vapor and liquid exposure to a minimum. The use of this product in applications where exposure levels are difficult to control should be reassessed.

## Ventilation:

Use local exhaust to control vapor, mist, and aerosol concentrations.

## Respiratory protection (specify type):

Not normally needed if local exhaust satisfactory. If needed, use MSHA-NIOSH approved respirator for substance with TLV not less than 0.05 mg/M<sup>3</sup> for aerosol generation in combination with approved cartridge for organic vapor. Caution, do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use positive pressure self-contained breathing apparatus.

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SECTION 8 SPECIAL PROTECTION INFORMATION (continued)

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Protective clothing:

Impervious gloves, apron, body-covering clothing.

Eye protection:

Chemical workers goggles. If splashing possible, use full face shield in addition.

---

Other protective equipment:

Eyewash station and safety shower near work area.

---

---

SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS

---

Precautions to be taken in handling or storing:

This compound should be handled with particular care and should be used only in well ventilated areas with precautions taken to reduce vapor and liquid exposure to a minimum. The use of this product in applications where exposure levels are difficult to control should be reassessed. When handling this combustible liquid, follow procedures specified in the National Fire Protection Association Codes and Standards. Keep containers closed in cool well-ventilated area. Keep away from heat, direct sunlight, sources of ignition and strong oxidizing agents. Use only grounded and bonded equipment.

---

The information herein is given in good faith  
but no warranty, express or implied, is made.

JS 002399

MKIL02524

# MATERIAL SAFETY DATA SHEET

EEA



ICI Americas Inc.

Wilmington, Delaware 19897

Phone (302) 575-3000 (24 hours)

Form No.: M3588-B

Date: 1/83

## SECTION 1 NAME & PRODUCT

Material name:

GLYCOL ETHER ACETATE, EEA, ethylene glycol monoethyl ether acetate, (EEA),  
2-ethoxyethyl acetate

Formula of primary component(s):

$C_2H_5OCH_2CH_2OOCCH_3$  CAS: 111-15-9

## SECTION 2 INGREDIENTS

Ethylene glycol monoethyl ether acetate

TLV (ACGIH)

gt 99 \*5 ppm skin

\*1982 ACGIH TLV Tables - Notice of Intended Changes.

OSHA's TLV is 100 ppm, skin.

Not specification values. gt = greater than, lt = less than, ca = approximately

## SECTION 3 PHYSICAL DATA

Boiling point: 313°F or 156°C

Vapor pressure (mmHg at 20°C): 1.2

Vapor density (air = 1): 4.72

Solubility in water: Appreciable

Specific gravity: 0.971-0.976 @ 20°/20°C

% Volatile by volume: Above 99

Appearance and odor: Colorless liquid mild, ester-like odor.

## SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point (and method):

130°F (TCC) or 54.4°C

Flammable limits (STP):

LEL: 1.24% UEL: 12.7%

Extinguishing media:

Water fog, alcohol foam, CO<sub>2</sub>, dry chemical, Halon 1211.

Special fire fighting protective equipment:

Self-contained breathing apparatus and full protective clothing.

Unusual fire and explosion hazards:

Explosions have occurred in still residues (copper still pot), when product is subject to low level peroxide formation. Class II combustible liquid, substance is a moderate fire and explosion hazard when exposed to heat and flames.

## SECTION 5 REACTIVITY DATA

Stability:

Stable under normal conditions.

Incompatibility (materials to avoid):

Acid, base and strong oxidizing material (can cause vigorous reaction).

Hazardous decomposition products:

Thermal decomposition products include CO<sub>2</sub> and CO.

JS 002404

MKIL02529

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**SECTION 5 REACTIVITY DATA (continued)**

---

Hazardous polymerization:  
Will not occur.

---

**SECTION 6 HEALTH HAZARD DATA**

---

**Oral ingestion:**

Rat acute oral LD<sub>50</sub> is 3.2 to 5.1 g/kg. This compound is probably slightly toxic to humans if ingested.

**Eye contact:**

This material may be somewhat irritating to eyes.

**Skin contact:**

This compound is probably not significantly irritating to the skin unless exposure is prolonged or repeated frequently.

**Skin absorption:**

Rabbit skin LD<sub>50</sub> is 10.5 g/kg. This material is absorbed through the intact skin. Repeated skin exposure may lead to systemic toxicity.

**Inhalation:**

Rats and rabbits survived single 4 hour exposures to saturated vapor-air mixtures of approximately 2000 ppm. This material is probably relatively non-toxic upon acute exposure.

**Other Comments:**

Very significant systemic toxic effects may occur after repeated exposure to EEA. Animal studies have shown that this material can induce malformed offspring and morphological changes in the testes. Selected animal studies are described below which support this assessment.

Cardiovascular and skeletal malformations and fetotoxicity were observed in the offspring of pregnant rats exposed to 390 ppm EEA 7 hours per day on days 7 to 15 of gestation. Similar exposure of pregnant rats to 130 ppm EEA induced a single cardiovascular malformation and produced fetotoxicity. Testicular atrophy was observed in mice orally dosed with EEA at 1000 mg/kg daily, 5 days per week for 5 weeks but was not observed at 500 mg/kg.

**Effects of overexposure:**

Vomiting, CNS depression, lung and kidney damage. Irritating to eyes, nose and throat.

**First aid procedures:**

**Eyes:** Immediately flush with plenty of water for at least 15 minutes and call a physician.

**Skin:** Remove contaminated clothing and flush skin with plenty of water. If redness, itching or a burning sensation develops, get medical attention. Wash clothing and decontaminate shoes before reuse.

**Ingestion:** Immediately induce vomiting by giving one or two glasses of water to drink and sticking finger down throat. Call a physician.

**Inhalation:** Remove to fresh air and if not breathing, give artificial respiration, preferably mouth-to-mouth. Call a physician.

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SECTION 7 SPILL OR LEAK PROCEDURES

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Steps to be taken in case material is released or spilled:

Cut off any source of ignition and ventilate spill area. Wear eye protection, protective clothing and respiratory protection during cleanup. Soak up with inert absorbent and shovel into waste container. Cover and remove container from work area.

---

Disposal method:

Because of flashpoint below 140°F, disposal of this product as a waste is subject to regulations under RCRA, 40 CFR, 261.21. The hazardous waste number is D001. Dispose of waste material by incineration or landfilling, using facilities permitted for hazardous waste.

Container disposal: Do not distribute, made available, furnish or reuse empty container except for storage or shipment of original product. Triple rinse (or equivalent) empty container and dispose of container either through an approved drum reclaimer, or puncture or crush container and dispose of in a permitted landfill for nonhazardous waste.

---

SECTION 8 SPECIAL PROTECTION INFORMATION

---

TLV® or suggested control figure:

1982 ACGIH TLV® Tables - Notice of Intended Changes: 5 ppm-skin. Recent animal data indicate that repeated exposure to ethylene glycol monoethyl ether acetate (EEA) has produced adverse effects including testicular lesions, embryotoxic and teratogenic effects. The current TLV® of 50 ppm-skin for EEA does not take these recent findings into account and may therefore not provide an adequate margin of safety for exposure to EEA. The 1982 American Conference of Governmental Industrial Hygienists Notice of Intended Change to 5 ppm-skin is consistent with our previous recommendation to control exposure to low single figure ppm levels. This compound should be handled with particular care and should be used only in well-ventilated areas with precautions taken to reduce vapor and liquid exposure to a minimum. The use of this product in applications where exposure levels are difficult to control should be reassessed.

---

Ventilation:

Use local exhaust to control vapor, mist and aerosol concentrations.

---

Respiratory protection (specify type):

May not be needed if local exhaust is satisfactory. If needed, use MSHA-NIOSH approved respirator for substance with TLV not less than 0.05 mg/M<sup>3</sup> for aerosol generation in combination with approved respirator for organic vapors. Caution, do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use positive pressure self-contained breathing apparatus.

---

Protective clothing:

Impervious gloves, apron and body-covering clothing.

---

Eye protection:

Chemical workers goggles. Use full face shield, in addition, if splashing is possible.

---

Other protective equipment:

Safety shower and eyewash station near exposure area.

---

JS 002406

MKIL02531

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**SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS**

---

**Precautions to be taken in handling or storing:**

This compound should be handled with particular care and should be used only in well ventilated areas with precautions taken to reduce vapor and liquid exposure to a minimum. The use of this product in applications where exposure levels are difficult to control should be reassessed. Store in closed containers in well-ventilated low fire risk area away from alkalies, acids, and oxidizing agents as well as away from sources of heat and ignition. Follow procedures specified in the National Fire Protection Association Codes and Standards when handling this combustible liquid.

---

The information herein is given in good faith  
but no warranty, express or implied, is made.

JS 002407

MKIL02532

# MATERIAL SAFETY DATA SHEET

EE



**ICI Americas Inc.**

Wilmington, Delaware 19897

Phone (302) 575-3000 (24 hours)

Form No.: M3585-C

Date: 1/83

## SECTION 1 NAME & PRODUCT

Material name:

GLYCOL ETHER EE, Monoethylene glycol monoethyl ether, EE, 2-ethoxyethanol

Formula of primary component(s):

$C_2H_5OC_2H_4OH$ , CAS 110-80-5

## SECTION 2 INGREDIENTS

Ethylene glycol monoethyl ether

| %     | TLV (ACGIH) |
|-------|-------------|
| gt 95 | *5 ppm skin |

\*1982 ACGIH TLV Tables - Notice of Intended Changes.

OSHA TLV 200 ppm (skin)

Not specification values. gt = greater than, lt = less than, ca = approximately

## SECTION 3 PHYSICAL DATA

Boiling point: 273.2°F (134°C)

Vapor pressure (mmHg at 20°C): 3.8

Vapor density (air = 1): 3.12

Solubility in water: Miscible

Specific gravity: 0.929-0.932 20/20°C

% Volatile by volume: 100

Appearance and odor: Colorless liquid, ether odor.

## SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point (and method):

110°F (TCC) or 43°C

Flammable limits (STP):

LEL: 1.8% UEL: 14.0%

Extinguishing media:

Water fog, alcohol foam for large fires; CO<sub>2</sub>, dry chemical, and Halon 1211 for small fires.

Special fire fighting protective equipment:

Self-contained breathing apparatus and full protective clothing.

Unusual fire and explosion hazards:

Autoignition temperature is 455°F (235°C). Class II combustible liquid.

## SECTION 5 REACTIVITY DATA

Stability:

Stable under normal conditions. Avoid open flames.

Incompatibility (materials to avoid):

Strong base and oxidizing material.

Hazardous decomposition products:

Thermal decomposition products include CO and CO<sub>2</sub>.

Hazardous polymerization:

Will not occur.

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---

SECTION 6 HEALTH HAZARD ASSESSMENT

---

## Oral ingestion:

Rat acute oral LD<sub>50</sub> is 3.0 g/kg. This compound is potentially slightly toxic to humans if ingested. However, if large quantities are consumed, this compound is harmful.

## Eye contact:

This compound can induce immediate pain, conjunctival irritation, and slight transient corneal irritation. This material has a potential to cause eye injury.

## Skin contact:

Mild rabbit skin irritant - even with prolonged contact. This compound is probably not hazardous to human skin.

## Skin absorption:

Rabbit skin LD<sub>50</sub> is 3.5 g/kg. This compound is absorbed through rabbit skin in acutely toxic amounts. This compound can be harmful if large quantities are absorbed or repeated skin absorption is allowed.

## Inhalation:

The LC<sub>50</sub> for mice exposed for 7 hours to EE vapors is reported to be 1820 ppm. Relative to other compounds, EE is slightly toxic by the inhalation route upon acute exposure.

## Other comments:

Very significant systemic toxic effects occur after repeated exposure to EE. Animals studies have shown that this material can induce malformed offspring and morphological changes in the testes. Selected animal studies are described below which support this assessment. More studies are available which confirm these results.

Significant testicular changes were observed in mice treated with EE orally at 1000 mg/kg, 5 times per week for 5 weeks. 500 mg/kg/day was a no observed effect level in this study. Offspring of pregnant rats exposed to EE vapors (200 ppm) on days 1 through 18 of gestation had cardiovascular defects and showed signs of embryotoxicity. Offspring of pregnant rabbits exposed to EE vapors (160 ppm) on days 1 through 18 of gestation had increases in cardiovascular and other defects and sign of embryotoxicity. Application of neat EE to the skin of pregnant rats, 0.25 ml four times daily, on days 7 through 16 of gestation produced cardiovascular defects and signs of embryotoxicity in the offspring.

## Effects of overexposure:

Eye irritation and disagreeable vapors. Tears, temporary corneal clouding, drowsiness, shortness of breath and narcosis. Liver and kidney damage from excessive exposure.

## First aid procedures:

Eyes: Immediately flush with plenty of water for at least 15 minutes and call a physician.

Skin: Flush with plenty of water. If redness, itching or a burning sensation develops, get medical attention. Remove contaminated clothing. Wash clothing and decontaminate shoes before reuse.

Ingestion: Immediately induce vomiting by giving one or two glasses of water to drink and sticking finger down throat. Call a physician.

Inhalation: Remove victim to fresh air, and if not breathing, give artificial respiration, preferably mouth-to-mouth. Call a physician.

JS 002401

MKIL02526

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**SECTION 7 SPILL OR LEAK PROCEDURES**

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Steps to be taken in case material is released or spilled:

Cut off any source of ignition and ventilate spill area. Wear eye protection, protective clothing and respiratory protection during cleanup. Soak up with an inert absorbent and shovel into waste container. Cover and remove. Wash residue to a wastewater sewer.

---

Disposal method:

Because of flashpoint below 140°F, disposal of this product as a waste is subject to regulations under RCRA, 40 CFR, 261.21. The hazardous waste number is D001. Incinerate or landfill waste material in facilities permitted for hazardous waste.

Container disposal: Do not distribute, made available, furnish or reuse empty container except for storage and shipment of original product. Triple rinse (or equivalent) empty container and dispose of container either through an approved drum reclaimer, or puncture or crush container and dispose of in a landfill permitted for nonhazardous waste.

---

**SECTION 8 SPECIAL PROTECTION INFORMATION**

---

TLV® or suggested control figure:

1982 ACGIH TLV® Tables - Notice of Intended Changes: 5 ppm-skin. Recent animal data indicate that repeated exposure to ethylene glycol monoethyl ether (EE) has produced adverse effects including testicular lesions, embryotoxic and teratogenic effects. The current TLV® of 50 ppm-skin for EE does not take these recent findings into account and may therefore not provide an adequate margin of safety for exposure to EE. The 1982 American Conference of Governmental Industrial Hygienists Notice of Intended Change to 5 ppm-skin is consistent with our previous recommendation to control exposure to low single figure ppm levels. This compound should be handled with particular care and should be used only in well-ventilated areas with precautions taken to reduce vapor and liquid exposure to a minimum. The use of this product in applications where exposure levels are difficult to control should be reassessed.

---

Ventilation:

Use local exhaust to control vapor, mist and aerosol concentrations.

---

Respiratory protection (specify type):

Not normally needed if local exhaust satisfactory. If needed, use MSHA-NIOSH approved respirator for the aerosol and/or organic vapor of a substance with TLV not less than 0.05 mg/m<sup>3</sup>. Caution, do not use respirators beyond their capabilities. For emergencies and unknown concentrations, use positive pressure self-contained breathing apparatus.

---

Protective clothing:

Impervious gloves, apron, body-covering clothing.

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Eye protection:

Chemical workers goggles. Wear full face shield, in addition, if splashing is possible.

---

Other protective equipment:

Safety shower and eyewash station near work area.

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MKIL02527

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**SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS**

---

**Precautions to be taken in handling or storing:**

This compound should be handled with particular care and should be used only in well ventilated areas with precautions taken to reduce vapor and liquid exposure to a minimum. The use of this product in applications where exposure levels are difficult to control should be reassessed. Follow procedures specified in the National Fire Protection Codes and Standards when handling this combustible liquid. Store in a cool well ventilated fire resistive storage for combustible liquids. Keep away from sources of heat and ignition. Ground and bond metal containers for liquid transfer to avoid static sparks. Do not store with alkali or oxidizing agents. Do not store in copper containers or with copper waste.

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The information herein is given in good faith  
but no warranty, express or implied, is made.

JS 002403

MKIL02528

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R13

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|  |   |   |
|--|---|---|
| MANUFACTURER'S NAME<br>Kalama Chemical, Inc.   |   | EMERGENCY TELEPHONE NO.<br>206-673-2550 |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>1296 NW 3rd, Kalama, Washington 98625 |   |   |
| CHEMICAL NAME AND SYNONYMS<br>Dipropylene Glycol Dibenzate                                   |   | TRADE NAME AND SYNONYMS<br>K FLEX DP    |
| CHEMICAL FAMILY<br>Benzoate Ester  | FORMULA<br>C <sub>20</sub> H <sub>22</sub> O <sub>5</sub> |   |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV (Units) | ALLOYS AND METALLIC COATINGS             | % | TLV (Units) |
|---|---|-------------|--|---|-------------|
| PIGMENTS  |   |             | BASE METAL                               |   |             |
| CATALYST D  |   |             | ALLOYS D                                 |   |             |
| VEHICLE N   |   |             | METALLIC COATINGS N                      |   |             |
| SOLVENTS A  |   |             | FILLER METAL PLUS COATING OR CORE FLUX A |   |             |
| ADDITIVES   |   |             | OTHERS                                   |   |             |
| OTHERS  |   |             |  |   |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |             |  | % | TLV (Units) |
| D   |   |             |  |   |             |
| N   |   |             |  |   |             |
| A   |   |             |  |   |             |

DISTRIBUTED BY  
**ACETONOR**  
**CHEMICAL**  
COMPANY  
5353 JILLSON STREET  
LOS ANGELES, CALIF. 90046  
PHONE: 213-269-9531

## SECTION III - PHYSICAL DATA

|   |            |  |      |
|---|------------|--|------|
| BOILING POINT (°F.) @ 5 mm Hg                             | 450        | SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 75°F | 1.13 |
| VAPOR PRESSURE (mm Hg.) @ 20°C                            | NIL        | PERCENT VOLATILE BY VOLUME (%)               | NIL  |
| VAPOR DENSITY (AIR=1)                                     | 11.8       | EVAPORATION RATE (_____=1)                   |      |
| SOLUBILITY IN WATER                                       | Negligible | Freeze Point °C                              | -40  |
| APPEARANCE AND ODOR Clear liquid with faint aromatic odor |            |  |      |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|   |              |                  |             |             |
|---|--------------|------------------|-------------|-------------|
| FLASH POINT (Method used)   | 415°F T.O.C. | FLAMMABLE LIMITS | LeI Unknown | Uel Unknown |
| EXTINGUISHING MEDIA<br>Dry chemical, CO <sub>2</sub> , Foam, Fog  |              |                  |             |             |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Work upwind from fire, if not possible, use self-contained breathing device |              |                  |             |             |
| UNUSUAL FIRE AND EXPLOSION HAZARDS  |              |                  |             |             |

JS 033177

## SECTION V - HEALTH HAZARD DATA

### THRESHOLD LIMIT VALUE

Not established by ACGIH

### EFFECTS OF OVEREXPOSURE

Repeated exposure may cause defatting of skin and mild irritation to eyes & nose.

### EMERGENCY AND FIRST AID PROCEDURES

Eyes - Flush with water for at least 15 minutes. Get medical attention if irritation persists. Skin - Remove contaminated clothing, wash skin with soap & water. Inhalation - Move into fresh air. If symptoms persist, get medical attention.

## SECTION VI - REACTIVITY DATA

### STABILITY

UNSTABLE

STABLE

### CONDITIONS TO AVOID

Open flames & high temperatures

### INCOMPATIBILITY (Materials to avoid)

Strong oxidizing agents

### HAZARDOUS DECOMPOSITION PRODUCTS

Combustion will yield CO<sub>2</sub> and CO in smoke.

### HAZARDOUS POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

### CONDITIONS TO AVOID

X

## SECTION VII - SPILL OR LEAK PROCEDURES

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Ventilate area. Absorb liquid in absorbant such as sawdust, diatomaceous earth, etc. Clean area with a detergent & water. Collect absorbant in closed containers.

### WASTE DISPOSAL METHOD

Dispose of in accordance with applicable local, state, and federal regulations. Controlled incineration or approved landfill should be considered.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

### RESPIRATORY PROTECTION (Specify type)

Chemical cartridge respirator or supplied air respirators

### VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

Adequate ventilation system

OTHER

### PROTECTIVE GLOVES

Impervious material

### EYE PROTECTION

Chemical worker's goggles

### OTHER PROTECTIVE EQUIPMENT

Suggest chemical worker's apron & face shield

## SECTION IX - SPECIAL PRECAUTIONS

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store away from source of ignition. Avoid repeated contact. Have adequate ventilation.

### OTHER PRECAUTIONS

JS 033178

PAGE (2)

0 930-540

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH,  
BUT NO WARRANTY EXPRESSED OR IMPLIED, IS MADE.

Form OSHA-20

Rev. May 72

4/1981

MKIL05944

# MATERIAL SAFETY DATA SHEET


Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|   |                    |   |
|---|--------------------|---|
| MANUFACTURER'S NAME<br>Kalama Chemical, Inc.  |                    | EMERGENCY TELEPHONE NO.<br>206-673-2550 |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>1296 NW 3rd, Kalama, Washington 98625        |                    |   |
| CHEMICAL NAME AND SYNONYMS<br>Blend of Dipropylene Glycol Dibenzoate & Diethylene Glycol Dibenzoate |                    | TRADE NAME AND SYNONYMS<br>K-Flex 500   |
| CHEMICAL FAMILY<br>Benzoate Ester   | FORMULA<br>Mixture |   |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV (Units) | ALLOYS AND METALLIC COATINGS             | % | TL (Units) |
|---|---|-------------|--|---|------------|
| PIGMENTS  |   |             | BASE METAL                               |   |            |
| CATALYST D  |   |             | ALLOYS D                                 |   |            |
| VEHICLE N   |   |             | METALLIC COATINGS N                      |   |            |
| SOLVENTS A  |   |             | FILLER METAL PLUS COATING OR CORE FLUX A |   |            |
| ADDITIVES   |   |             | OTHERS                                   |   |            |
| OTHERS  |   |             |  |   |            |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |             |  | % | TL (Units) |
| D   |   |             |  |   |            |
| N   |   |             |  |   |            |
| A   |   |             |  |   |            |

DISTRIBUTED BY  
 J. C. HIGGINS  
 CHEMICAL CO.  
 5353 JILLSON STREET  
 LOS ANGELES, CALIF. 90040  
 PHONE: 213-269-9531

## SECTION III - PHYSICAL DATA

|   |            |  |      |
|---|------------|--|------|
| BOILING POINT (°F.) @ 5mm Hg                              | 455        | SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 75°F | 1.15 |
| VAPOR PRESSURE (mm Hg.) @ 20°C                            | NIL        | PERCENT VOLATILE BY VOLUME (%)               | NIL  |
| VAPOR DENSITY (AIR=1)                                     | 11.3       | EVAPORATION RATE (_____=1)                   | DNA  |
| SOLUBILITY IN WATER                                       | Negligible | Freeze Point °C                              | 6    |
| APPEARANCE AND ODOR Clear liquid with faint aromatic odor |            |  |      |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|  |                |                  |             |             |
|--|----------------|------------------|-------------|-------------|
| FLASH POINT (Method used)  | 414°F (T.O.C.) | FLAMMABLE LIMITS | Lel Unknown | Uel Unknown |
| EXTINGUISHING MEDIA<br>Dry chemical, CO <sub>2</sub> , Foam, Fog   |                |                  |             |             |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Work upwind from fire, if not possible, use self-contained breathing device. |                |                  |             |             |
| UNUSUAL FIRE AND EXPLOSION HAZARDS   |                |                  |             |             |

JS 033175

## SECTION V - HEALTH HAZARD DATA

### THRESHOLD LIMIT VALUE

Not established by ACGIH

### EFFECTS OF OVEREXPOSURE

Repeated exposure may cause defatting of skin & mild irritation to eyes & nose.

### EMERGENCY AND FIRST AID PROCEDURES

Eyes - Flush with water for at least 15 minutes. Get medical attention if irritation persists. Skin - Remove contaminated clothing. Wash skin with soap & water.

Inhalation - Move into fresh air. If symptoms persist, get medical attention.

## SECTION VI - REACTIVITY DATA

|   |                |   |                                 |
|---|----------------|---|---------------------------------|
| STABILITY   | UNSTABLE       |   | CONDITIONS TO AVOID             |
|   | STABLE         | X | Open flames & High temperatures |
| INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents                          |                |   |                                 |
| HAZARDOUS DECOMPOSITION PRODUCTS Combustion will yield CO <sub>2</sub> & CO in smoke. |                |   |                                 |
| HAZARDOUS POLYMERIZATION  | MAY OCCUR      |   | CONDITIONS TO AVOID             |
|   | WILL NOT OCCUR | X |                                 |

## SECTION VII - SPILL OR LEAK PROCEDURES

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Ventilate area. Absorb liquid in absorbant such as sawdust, diatomaceous earth, etc. Clean area with a detergent & water. Collect absorbant in closed containers.

### WASTE DISPOSAL METHOD

Dispose of in accordance with applicable local, state, and federal regulations. Controlled incineration or approved land fill should be considered.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

### RESPIRATORY PROTECTION (Specify type)

Chemical cartridge respirator or supplied air respirators

|  |   |  |
|--|---|--|
| VENTILATION  | LOCAL EXHAUST   | SPECIAL                                  |
|  | MECHANICAL (General)<br>Adequate ventilation required | OTHER                                    |
| PROTECTIVE GLOVES Impervious material                                    |   | EYE PROTECTION Chemical Worker's goggles |
| OTHER PROTECTIVE EQUIPMENT Suggest chemical worker's apron & face shield |   |  |

## SECTION IX - SPECIAL PRECAUTIONS

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store away from source of ignition. Avoid repeated contact. Have adequate ventilation

### OTHER PRECAUTIONS

JS 033176

# MATERIAL SAFETY DATA SHEET

MSD139

MANUFACTURER: McKESSON CHEMICAL COMPANY  
9005 Sorensen Avenue  
Santa Fe Springs, CA 90670

DATE: 0184N

PRODUCT NAME: MBL SS-11 Blend

EMERGENCY TELEPHONE NUMBER: (213) 946-6491 for McKesson/Santa Fe Springs 8AM-5PM  
PT, M-F; (800) 424-9300 for Chemtrec 24 hr per day.

CHEMICAL FAMILY: Mixture of aliphatic hydrocarbons and chlorinated aliphatic hydrocarbons

| INGREDIENTS:          | FORMULA:               | : % : Weight |
|-----------------------|------------------------|--------------|
| 1,1,1-Trichloroethane | $C_2H_3Cl_3$           | 36           |
| Kerosene 450          | approx. $C_{12}H_{24}$ | 30           |
| Perchloroethylene     | $C_2Cl_4$              | 21           |
| Toluene               | $C_7H_8$               | 13           |

## SECTION 1

## PHYSICAL DATA

BOILING POINT (°F): 165

VAPOR PRESSURE (mm Hg): 45/20°C\*\*

VAPOR DENSITY (AIR=1): 4.8\*\*

SOLUBILITY IN WATER (WEIGHT %): <1\*\*

SPECIFIC GRAVITY (WATER=1): 1.09\*\*

VOLATILES (VOLUME %): Essentially 100

EVAPORATION RATE (BUTYL ACETATE=1): >1\*\*

APPEARANCE AND ODOR: Colorless liquid, mild odor.

\*\*If indicated, the Physical Data for this mixture have been calculated from its component data and accepted chemical formulas.\*\*

## SECTION 2

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (°F): None

METHOD USED: Closed Cup

FLAMMABLE LIMITS (estimated):

LEL: 1 UEL: 15

EXTINGUISHING MEDIA: CO<sub>2</sub> or water fog.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NIOSH approved self-contained respiratory equipment should be worn.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May liberate hydrogen chloride, phosgene or chlorine if burned.

## SECTION 3

## HEALTH HAZARD DATA

TLV: 1,1,1-Trichloroethane=350ppm ; Kerosene 450 = not established; Perchloroethylene = 50ppm; Toluene = 200ppm

EFFECTS OF OVEREXPOSURE --See page 3--

INGESTION: Low in single dose oral toxicity, although may cause vomiting.

EYE CONTACT: May cause pain and irritation and possible corneal injury.

INHALATION: Anesthetic effects. Can cause death if too much breathed.

SKIN CONTACT: (See page 3)

## SECTION 4

## FIRST AID PROCEDURES

Remove contaminated clothing as soon as possible.

EYES: Immediately water flush for 15 min. holding eyelids apart. Get medical attention.

SKIN: Wash with lots of running water. Get medical attention if irritation occurs.

INHALATION: (See page 3)

INGESTION: (See page 3)

JS 032937

Material Safety Data Sheet  
McKesson Chemical  
MSD139---MBL SS-11 Blend  
Page Three

### Section 3 -- Health Hazard Data

Skin Contact: Short contact: no irritation expected. Prolonged or repeated contact: will irritate and may burn. If confined to the skin: will burn.

The U.S. National Cancer Institute has determined that perchloroethylene, a component of this mixture, causes cancer in some animals.

### Section 4 -- First Aid Procedures

Inhalation: Remove to fresh air. Give artificial respiration if breathing has stopped but never to an unconscious or convulsing patient. Get medical attention.

Ingestion: Do not induce vomiting. Get medical attention immediately.

### Section 7 -- Special Protection Information

Respiratory Protection: NIOSH-approved respiratory protection in addition to engineering controls. For concentrations in air up to 2% an approved cannister respirator is acceptable. For concentrations above 2% and for emergencies a self-contained breathing apparatus is recommended.

### Section 8 -- Special Precautions

Components of this mixture are volatile and will evaporate if the container is left open. Evaporation will be accelerated by high temperatures. Under these conditions the composition of this mixture will change and the information given herein may not correctly identify the resulting solution. Observe the precaution given in Section 8 to minimize evaporation.

JS 032938

MKIL05704

## MATERIAL SAFETY DATA SHEET

MSD187

MANUFACTURER: MCKESSON CHEMICAL COMPANY  
9005 Sorensen Avenue  
Santa Fe Springs, CA 90670

DATE: 0884N

PRODUCT NAME: Getty Blend

EMERGENCY TELEPHONE NUMBER: (213) 946-6491 for McKesson/Santa Fe Springs 8AM-5PM PT, M-  
(800) 424-9300 for Chemtrec 24 hr per day.

CHEMICAL FAMILY: Aqueous solution of an aliphatic glycol.

## INGREDIENTS:

## FORMULA:

: % : Weight

Triethylene Glycol

 $C_6H_{14}O_4$ 

50

Water

 $H_2O$ 

50

## SECTION 1

## PHYSICAL DATA

BOILING POINT ( $^{\circ}F$ ): 212VAPOR PRESSURE (mm Hg): 15/20 $^{\circ}C^{**}$ 

VAPOR DENSITY (AIR=1): 1.5\*\*

SOLUBILITY IN WATER (WEIGHT %): complete

SPECIFIC GRAVITY (WATER=1): 1.06\*\*

VOLATILES (VOLUME %): nil

EVAPORATION RATE (BUTYL ACETATE=1): &lt;1\*\*

APPEARANCE AND ODOR: Colorless liquid, slight odor.

\*\*If indicated, the Physical Data for this mixture have been calculated  
from its component data and accepted chemical formulas.\*\*

## SECTION 2

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT ( $^{\circ}F$ ): >230

METHOD USED: Closed Cup

FLAMMABLE LIMITS (estimated):

LEL: 1

UEL: 9

EXTINGUISHING MEDIA: CO<sub>2</sub> or water fog.SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NIOSH approved self-contained  
respiratory equipment should be worn.

UNUSUAL FIRE AND EXPLOSION HAZARDS: none

## SECTION 3

## HEALTH HAZARD DATA

TLV: Triethylene glycol and water = not established.

## EFFECTS OF OVEREXPOSURE

INGESTION: May cause nausea and vomiting.

EYE CONTACT: May irritate the eyes.

INHALATION: Low volatility. Prolonged and repeated over exposure (see p. 3)

SKIN CONTACT: (See page 3)

## SECTION 4

## FIRST AID PROCEDURES

EYES: Remove contaminated clothing as soon as possible. Immediately water flush for  
15 min. holding eyelids apart. Get medical attention.

SKIN: Wash with lots of running water. Get medical attention if irritation occurs.

INHALATION: (See page 3)

INGESTION: (See page 3)

JS 032862

MKIL05628

SECTION 5REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Avoid open flames, welding arcs or other high temperature sources which will induce thermal decomposition.

INCOMPATIBILITY: Oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

SECTION 6SPILL OR LEAK PROCEDURES

ACTION TO TAKE FOR SPILLS:

Keep from water supply or ground.

Wear appropriate protective equipment.

SMALL: Absorb onto rags or sand. Transfer to closed container.

LARGE: Evacuate area, contain. Pump into closed containers or absorb onto sand.

WASTE DISPOSAL METHOD:

Burn according to applicable regulations. Observe all governmental regulations during disposal.

SECTION 7SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust and/or mechanical ventilation.

RESPIRATORY PROTECTION: Not normally needed but organic vapor respirators suggested in the absence of environmental controls.

PROTECTIVE CLOTHING: Body covering clothing. Rubber or vinyl-coated gloves and apron.

EYE PROTECTION: Chemical goggles.

OTHER PROTECTIVE EQUIPMENT: Eyewash and safety shower nearby.

SECTION 8SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in cool, dry place. Do not breathe mists. Vapors are heavier than air and will collect in low places. Do not enter these areas unless special breathing apparatus is used and an observer is present.

OTHER PRECAUTIONS:

Keep container closed when not in use.

LABELLING INSTRUCTIONS:

Warning: Avoid Skin Contact and Breathing Mists.  
Do Not Take Internally.  
Use Only With Adequate Ventilation.  
Keep Out of Reach of Children.  
For Manufacturing Use Only.  
Do Not Get in Eyes.

JS 032863

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MKIL05629

Material Safety Data Sheet  
McKesson Chemical  
MSD187--Getty Blend  
Page 3

Section 3 -- Health Hazard Data

Inhalation: May damage Kidneys, liver, lungs, blood, or central nervous system.

Skin Contact: Short contact: no irritation expected. Prolonged or repeated contact: will irritate.

Section 4 -- First Aid Procedures

Inhalation: Remove to fresh air. Give artificial respiration if breathing has stopped but never to an unconscious or convulsing patient. Get medical attention.

Ingestion: Induce vomiting by giving water and sticking a finger down the throat. Get medical attention immediately.

JS 032864

MKIL05630

# MATERIAL SAFETY DATA SHEET

MSD 204

MANUFACTURER: McKESSON CHEMICAL COMPANY  
9005 Sorensen Avenue  
Santa Fe Springs, CA 90670

DATE: 0185N

PRODUCT NAME: Aerochem Blend

EMERGENCY TELEPHONE NUMBER: (213)946-6491 for McKesson/Santa Fe Springs 8AM-5PM M-F  
PT. (800)424-9300 for Chemtrec 24 hr per day.

CHEMICAL FAMILY: Mixture of an aromatic hydrocarbon & an aliphatic ketone.

| INGREDIENTS:        | FORMULA:  | : % : Volume |
|---------------------|-----------|--------------|
| Methyl Ethyl Ketone | $C_4H_8O$ | 60           |
| Toluene             | $C_7H_8$  | 40           |

## SECTION 1

## PHYSICAL DATA

BOILING POINT (°F): 175  
VAPOR PRESSURE (mm Hg): 53/20°C\*\*  
VAPOR DENSITY (AIR=1): 2.7\*\*

SOLUBILITY IN WATER (WEIGHT %): 11\*\*  
SPECIFIC GRAVITY (WATER=1): 0.84\*\*  
VOLATILES (VOLUME %): Essentially 100  
EVAPORATION RATE (BUTYL ACETATE=1): >1

APPEARANCE AND ODOR: Clear, colorless; mild aromatic odor.

\*\*If indicated, the Physical Data for this mixture have been calculated from its component data and accepted chemical formulas.\*\*

## SECTION 2

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (°F): 31  
METHOD USED: TCC

FLAMMABLE LIMITS (estimated):  
LEL: 1 UEL: 10

EXTINGUISHING MEDIA: Foam, CO<sub>2</sub>, or dry chemicals.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS:

Do not use water to fight fire. Exclude air.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Vapors may form explosive mixture with air.

## SECTION 3

## HEALTH HAZARD DATA

TLV: Toluene = 200 ppm; Methyl Ethyl Ketone = 200 ppm; not established for Aerochem Blend.

EFFECTS OF OVEREXPOSURE

INGESTION: May cause nausea and vomiting .

EYE CONTACT: Will irritate the eyes

INHALATION: Breathing high concentrations may cause dizziness and anesthesia

SKIN CONTACT: May irritate the skin upon prolonged or repeated contact

## SECTION 4

## FIRST AID PROCEDURES

EYES: Immediately flush with running water for 15. min Get medical attention.

SKIN: Wash with running water. Get medical attention if irritation begins.

INHALATION: (See page 3)

INGESTION: (See page 3)

JS 032852

MKIL05618

Material Safety Data Sheet  
McKesson Chemical  
MSD 204 -- Aerochem Blend

Section 4 -- First Aid Procedures

Inhalation: Remove to fresh air. Give artificial respiration if not breathing but never to an unconscious or convulsing person. Get immediate medical attention.

Ingestion: Do not induce vomiting. Get immediate medical attention.

JS 032854

MKIL05620

SECTION 5REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Open flames, sparks, or heat.

INCOMPATIBILITY: Oxidizers, mineral acids, alkalis.

HAZARDOUS DECOMPOSITION PRODUCTS: May generate CO or CO<sub>2</sub> if burned.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

---

SECTION 6SPILL OR LEAK PROCEDURES

ACTION TO TAKE FOR SPILLS:  
Keep from ground, sewer, or  
water supply.

SMALL: Mop or wipe up.

LARGE: Eliminate sources of ignition, evacuate  
personnel, contain, pump into closed container.

WASTE DISPOSAL METHOD:

Send to reclaimer. Observe all governmental regulations during spill clean-up.

---

SECTION 7SPECIAL PROTECTION INFORMATION

VENTILATION: Limit concentrations in air to less than the lowest TLV.

RESPIRATORY PROTECTION: Organic vapor respirators in the absence of environmental  
control. NIOSH-approved air-supplied masks in confined area or for emergencies.

PROTECTIVE CLOTHING: Body covering clothing, rubber or vinyl gloves, and rubber  
or vinyl apron.

EYE PROTECTION: Chemical goggles.

OTHER PROTECTIVE EQUIPMENT: Eyewash and safety shower nearby.

---

SECTION 8SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid splash filling. Avoid  
open flames and sparks. Store in a cool place away from direct sunlight. Keep container  
closed when not in use.

OTHER PRECAUTIONS: Use only non-sparking tools.

LABELLING INSTRUCTIONS:

WARNING! Flammable

Keep Away From Open Flames, Sparks, or Heat

Breathing Vapors May Be Harmful

Liquid and Vapor Cause Eye Irritation

Do Not Take Internally

Keep Container Closed

For Industrial Use Only

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JS 032853

MKIL05619

CAUSTIC SODA

REVISION OF: / /

MCKESSON CHEMICAL COMPANY

SAN FRANCISCO BRANCH

33950 7TH STREET  
UNION CITY CA 94587

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

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EMERGENCY ASSISTANCE

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FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9300.

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FOR PRODUCT AND SALES INFORMATION

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CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

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PRODUCT IDENTIFICATION

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PRODUCT NAME: CAUSTIC SODA BEADS CAS NO.: 1310-73-2  
COMMON NAMES/SYNONYMS: SODIUM HYDROXIDE MCKESSON CODE: T1282  
ANHYDROUS; LYE; CAUSTICFORMULA: NA O H  
HAZARD RATING (NFPA 704)  
HEALTH: 3  
FIRE: 0  
REACTIVITY: 1  
SPECIAL: NONEDATE ISSUED: 09/85  
SUPERCEDES: 11/85  
HAZARD RATING SCALE:  
0-MINIMAL 3-SERIOUS  
1-SLIGHT 4-SEVERE  
2-MODERATE

---

HAZARDOUS INGREDIENTS

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| COMPONENT        | EXPOSURE LIMITS, MG/M3 |              |                |      | HAZARD           |
|------------------|------------------------|--------------|----------------|------|------------------|
|                  | OSHA<br>% PEL          | ACGIH<br>TLV | OTHER<br>LIMIT |      |                  |
| SODIUM HYDROXIDE | >99                    | 2            | 2              | NONE | CORROSIVE; TOXIC |

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PHYSICAL PROPERTIES

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BOILING POINT, DEG F: 2530 VAPOR PRESSURE, MM HG/20 DEG C: N/A  
MELTING POINT, DEG F: 590 VAPOR DENSITY (AIR-1): N/A  
SPECIFIC GRAVITY (WATER-1): 2.13 WATER SOLUBILITY, %: 100  
APPEARANCE AND ODOR: OPAQUE, EVAPORATION RATE (BUTYL ACETATE-1): N/A  
WHITE SOLID, NO ODOR

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FIRST AID MEASURES

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CAUSTIC SODA

REVISION OF: 02/14/86

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 30 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING WATER FOR 30 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

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#### HEALTH HAZARD INFORMATION

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PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

#### SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: DUSTS ARE EXTREMELY CORROSIVE TO THE ENTIRE RESPIRATORY TRACT. BREATHING DUST CAN DESTROY THE MUCOUS MEMBRANES AND CAN CAUSE SEVERE PNEUMONITIS.

EYE CONTACT: DUSTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT CAUSES SEVERE EYE DAMAGE AND PROLONGED CONTACT CAUSES PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: DUSTS ARE EXTREMELY CORROSIVE TO THE SKIN AND RAPIDLY CAUSE SEVERE CHEMICAL BURNS. MOISTURE ON THE SKIN, SUCH AS FROM PERSPIRATION, WILL ACCELERATE TISSUE DESTRUCTION.

SWALLOWED: DUSTS OR SOLIDS ARE EXTREMELY CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING DUSTS OR SOLIDS CAUSES SEVERE AND RAPID BURNING OF THE MOUTH, THROAT, AND DIGESTIVE TRACT ACCOMPANIED BY SEVERE PAIN, VOMITING AND COLLAPSE. SOME EFFECTS MAY BE DELAYED.

CHRONIC EFFECTS OF EXPOSURE: MAY RESULT IN AREAS OF DESTRUCTION OF SKIN TISSUE OR PRIMARY IRRITANT DERMATITIS. SIMILARLY, INHALATION OF DUSTS, VAPORS, OR MISTS MAY CAUSE VARYING DEGREES OF DAMAGE TO THE AFFECTED TISSUES AND ALSO INCREASING SUSCEPTIBILITY TO RESPIRATORY ILLNESS.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN.

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#### TOXICITY DATA

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ORAL: RAT LD50-140-340 MG/KG

DERMAL: RABBIT LD50-1350 MG/KG

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN

MK00052503

MKIL174407

CAUSTIC SODA

REVISION OF: 02/14/86

BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: A 1 MG SOLUTION IN THE EYE OF A RABBIT FOR 24 HRS PRODUCED SEVERE IRRITATION

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PERSONAL PROTECTION

---

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: NIOSH-APPROVED DUST RESPIRATOR OR MASK IN THE ABSENCE OF ADEQUATE ENVIRONMENTAL CONTROLS AT THE POINT OF USE.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACE SHIELD.

PROTECTIVE CLOTHING: ALKALI-RESISTANT SLICKER SUIT WITH RUBBER APRON, RUBBER BOOTS WITH PANTS OUTSIDE, AND RUBBER GLOVES WITH GAUNTLETS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

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FIRE AND EXPLOSION INFORMATION

---

FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. CONTACT WITH WATER MAY GENERATE ENOUGH HEAT TO IGNITE COMBUSTIBLE MATERIALS

SPECIAL FIRE FIGHTING PROCEDURES: NONE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: THIS MATERIAL MELTS AT 590 DEG F. HOT MOLTEN MATERIAL WILL REACT VIOLENTLY WITH WATER RESULTING IN SPATTERING AND FUMING. THIS PRODUCT WILL REACT WITH METALS SUCH AS ALUMINUM, TIN, AND ZINC TO PRODUCE FLAMMABLE HYDROGEN GAS.

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HAZARDOUS REACTIVITY

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STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: KEEP WATER AND MOIST AIR OUT OF THE CONTAINER.

MATERIALS TO AVOID: ACIDS, COMBUSTIBLE MATERIALS, AND METALS SUCH AS ALUMINUM, TIN, GALVANIZED ZINC, BRASS, AND BRONZE. KEEP AWAY FROM ORGANIC HALOGEN COMPOUNDS, ESPECIALLY TRICHLOROETHYLENE.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

---

SPILL, LEAK, AND DISPOSAL PROCEDURES

---

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND CHEMICAL GOGGLES. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

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# MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

REVISION OF: 02/14/86

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

## SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER. HAZARDOUS CARBON MONOXIDE GAS CAN FORM UPON CONTACT WITH FOOD AND BEVERAGE PRODUCTS IN ENCLOSED SPACES AND CAN CAUSE DEATH. DO NOT ENTER TANKS WHEN SUCH CONTACT IS SUSPECTED UNLESS THE ABSENCE OF CARBON MONOXIDE HAS BEEN CONFIRMED BY TESTS.

OTHER PRECAUTIONS: THIS MATERIAL GENERATES CONSIDERABLE HEAT WHEN DISSOLVED IN WATER. WHEN MIXING WITH WATER ALWAYS ADD CAUSTIC SODA SLOWLY TO WATER AND STIR CONTINUOUSLY. NEVER ADD WATER TO CAUSTIC SODA.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

## FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)983-9214

## NOTICE

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

## REVISION

02/86: REVISED FIRST AID MEASURES.

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END OF MSDS

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MK00052506

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MKIL174410

# MATERIAL SAFETY DATA SHEET

MSD 210

MANUFACTURER: McKesson Chemical Company  
9005 Sørensen Avenue  
Santa Fe Springs, CA. 90670  
PRODUCT NAME: McKSolv (R) 43

DATE: 0485N

EMERGENCY TELEPHONE NUMBER: (213) 946-6491 for McKesson/Santa Fe Springs 8AM - 5PM,  
PT, M-F (800) 424-9300 for Chemtrec 24 hr per day.  
CHEMICAL FAMILY: Mixture of aliphatic glycols.

| INGREDIENTS:    | FORMULA:    | Volume<br>: % : |
|-----------------|-------------|-----------------|
| Glycerin        | $C_3H_8O_3$ | 50              |
| Ethylene Glycol | $C_2H_6O_2$ | 50              |

## SECTION 1

## PHYSICAL DATA

BOILING POINT ( $^{\circ}F$ ): 340  
VAPOR PRESSURE (mm Hg):  $< 0.1/20^{\circ}C$   
VAPOR DENSITY (AIR=1): 2.5\*\*

SOLUBILITY IN WATER (WEIGHT %): Complete  
SPECIFIC GRAVITY (WATER=1): 1.18\*\*  
VOLATILES (VOLUME %): nil  
EVAPORATION RATE (BUTYL ACETATE=1):  $< 1$ \*\*

APPEARANCE AND ODOR: Colorless liquid, slight odor.

\*\*If indicated, the Physical Data for this mixture have been calculated from its component data and accepted chemical formulas.\*\*

## SECTION 2

## FIRE AND EXPLOSION HAZARD DATA

FLASH POINT ( $^{\circ}F$ ): 240  
METHOD USED: Closed Cup

FLAMMABLE LIMITS (estimated):

LEL: N/A UEL: N/A

EXTINGUISHING MEDIA:  $CO_2$  or water fog.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NIOSH approved self-contained respiratory equipment should be worn.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

## SECTION 3

## HEALTH HAZARD DATA

TLV: Not established for McKSolv (R) 43;  
Ethylene glycol = 50ppm ceiling (ACGIH); Glycerin - not established

### EFFECTS OF OVEREXPOSURE

INGESTION: May cause pain, nausea, and vomiting. Gross overexposure may cause severe

EYE CONTACT: May cause pain and irritation. Kidney damage.

INHALATION: Low volatility but breathing mists may cause nausea and dizziness.

SKIN CONTACT: (See page 3)

## SECTION 4

## FIRST AID PROCEDURES

Remove contaminated clothing as soon as possible. Immediately water flush for  
EYES: 15 min. holding eyelids apart. Get medical attention.

SKIN: Wash with lots of running water. Get medical attention if irritation occurs.

INHALATION: (See page 3)

INGESTION: (See page 3)

JS 032843

MKIL05609

## SECTION 5

## REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Avoid open flames, welding arcs or other high temperature sources which will induce thermal decomposition.

INCOMPATIBILITY: Oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

---

## SECTION 6

## SPILL OR LEAK PROCEDURES

ACTION TO TAKE FOR SPILLS:  
Keep from water supply or ground.  
Wear appropriate protective equipment.

SMALL: Absorb onto rags or sand. Transfer to closed container.  
LARGE: Evacuate area, contain. Pump into closed containers or absorb onto sand.

WASTE DISPOSAL METHOD:

Burn according to applicable regulations. Observe all governmental regulations during disposal.

---

## SECTION 7

## SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust and/or mechanical ventilation.

RESPIRATORY PROTECTION: NIOSH approved respiratory protection in the absence of environmental controls. For emergencies, a self-contained breathing apparatus or full face respirator is recommended.

PROTECTIVE CLOTHING: Body covering clothing. Rubber or vinyl-coated gloves and apron.

EYE PROTECTION: Chemical goggles.

OTHER PROTECTIVE EQUIPMENT: Eyewash and safety shower nearby.

---

## SECTION 8

## SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in cool, dry place.  
Do not breathe mists.

OTHER PRECAUTIONS: Keep container closed when not in use.

LABELLING INSTRUCTIONS:

WARNING: Avoid Skin Contact and Breathing Mists.  
Do Not Take Internally.  
Use Only With Adequate Ventilation.  
Keep Out of Reach of Children.  
For Manufacturing Use Only.  
Do Not Get in Eyes.  
Do Not Breathe Mists or Sprays.

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JS 032844

MKIL05610

Section 3 -- Health Hazard Data

Skin Contact: Short contact: no irritation expected. Prolonged or repeated contact: may dry the skin.

Section 4 -- First Aid Procedures

Inhalation: Remove to fresh air. Give artificial respiration if breathing has stopped but never to an unconscious or convulsing patient. Get medical attention.

Ingestion: Induce vomiting by giving water and sticking a finger down the throat. Get medical attention immediately.

JS 032845

MKIL05611

## MATERIAL SAFETY DATA SHEET

PG 1

METHYLENE CHLORIDE MIXTUR

REVISION OF: 02/18/86

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

## -----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9300.

## -----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

## -----PRODUCT IDENTIFICATION-----

PRODUCT NAME: AP 82 CAS NO.: MIXTURE  
COMMON NAMES/SYNONYMS: MIXTURE OF MCKESSON CODE: T2014005  
METHYLENE CHLORIDE, METHANOL, AND LOW  
MOLECULAR WEIGHT ALCOHOLS, ESTERS, AND AROMATICS

FORMULA: MIXTURE  
HAZARD RATING (NFPA 704)  
HEALTH: 2  
FIRE: 1  
REACTIVITY: 0  
SPECIAL: NONE

DATE ISSUED: 02/86  
SUPERCEDES: 11/85  
HAZARD RATING SCALE:  
0=MINIMAL 3=SERIOUS  
1=SLIGHT 4=SEVERE  
2=MODERATE

## -----HAZARDOUS INGREDIENTS-----

| COMPONENT                | Z         | EXPOSURE LIMITS, PPM |           |             | HAZARD              |
|--------------------------|-----------|----------------------|-----------|-------------|---------------------|
|                          |           | OSHA PEL             | ACGIH TLV | OTHER LIMIT |                     |
| METHYLENE CHLORIDE       | >80       | 500                  | 100       | NONE        | ACGIH / OSHA LIST   |
| METHANOL                 | APPROX 10 | 200                  | 200       | NONE        | TOXIC, FLAMMABLE    |
| ACETONE                  | )         | 1000                 | 750       | NONE        | FLAMMABLE; IRRITANT |
| METHYL ETHYL KETONE      | )         | 200                  | 200       | NONE        | FLAMMABLE           |
| ETHYL ACETATE            | )         | 400                  | 400       | NONE        | FLAMMABLE           |
| ISOPROPANOL              | ) MAX 10  | 400                  | 400       | NONE        | FLAMMABLE           |
| TOLUENE                  | )         | 200                  | 100       | NONE        | FLAMMABLE           |
| 1,1,1-TRICHLOROETHANE    | )         | 350                  | 350       | NONE        | OSHA/ACGIH LIST     |
| TRICHLOROETHYLENE        | )         | 100                  | 50        | NONE        | OSHA/ACGIH LIST     |
| TRICHLOROTRIFLUOROETHANE | )         | 1000                 | 1000      | NONE        | OSHA/ACGIH LIST     |

## -----PHYSICAL PROPERTIES-----

MK095938

MATERIAL SAFETY DATA SHEET

PG 2

METHYLENE CHLORIDE MIXTUR

REVISION OF: 02/18/86

BOILING POINT, DEG F: 104 VAPOR PRESSURE, MM HG/20 DEG C: 340  
 MELTING POINT, DEG F: N/A VAPOR DENSITY (AIR=1): 2.5  
 SPECIFIC GRAVITY (WATER=1): 1.23 WATER SOLUBILITY, %: 2  
 APPEARANCE AND ODOR: CLEAR, EVAPORATION RATE (BUTYL ACETATE=1): 11  
 COLORLESS LIQUID; MILD ODOR

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: PROLONGED OR REPEATED EXPOSURE OR BREATHING VERY HIGH CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, AND VOMITING. IF PROLONGED EXCESSIVELY, BREATHING VAPORS MAY RESULT IN UNCONSCIOUSNESS, KIDNEY AND LUNG DAMAGE, OR EVEN DEATH.

EYE CONTACT: CAUSES PAIN AND MODERATE IRRITATION AND POSSIBLY REVERSIBLE CORNEAL INJURY.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. MAY BURN THE SKIN IF CONFINED TO THE SKIN.

SWALLOWED: CAUSES ABDOMINAL PAIN AND POSSIBLE ASPIRATION PNEUMON-

MK095939

## METHYLENE CHLORIDE MIXTURE

REVISION OF: 02/10/86

IT IS IF VOMITED. METHYLENE CHLORIDE IS METABOLIZED IN THE BODY TO CARBON MONOXIDE WHICH REDUCES THE OXYGEN-CARRYING CAPACITY OF THE BLOOD. THIS PRODUCT CONTAINS METHANOL: POISONOUS SWALLOWING THIS PRODUCT MAY BE FATAL OR CAUSE BLINDNESS.

CHRONIC EFFECTS OF EXPOSURE: ELEVATED CARBOXYHEMOGLOBIN LEVELS. IN A 2-YEAR INHALATION STUDY IN RATS, METHYLENE CHLORIDE, THE MAJOR COMPONENT OF THIS MIXTURE, HAS BEEN SHOWN TO PRODUCE A STATISTICALLY SIGNIFICANT INCREASE IN SALIVARY GLAND TUMORS AT A CONCENTRATION OF 3,500 PPM. THE TOXIC HAZARDS ARE INCREASED BY THE PRESENCE OF ALCOHOL, CARBON MONOXIDE, PERFORMING HEAVY LABOR, OR BY SMOKING.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN.

## -----TOXICITY DATA-----

## METHYLENE CHLORIDE

ORAL: RAT LD50 = 2,524 MG/KG

DERMAL: RABBIT LD50 > 4,640 MG/KG

INHALATION: MOUSE LD50 = 14,400 PPM /7 HR; HUMAN TCLO = 500 PPM /8 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: A RECENT ALERT ISSUED BY THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES REPORTS RECENT STUDIES SHOW THAT METHYLENE CHLORIDE CAUSES CANCER IN LABORATORY ANIMALS. THE IARC CARCINOGENIC DETERMINATION IS ANIMAL INDEFINITE. AN EPIDEMIOLOGICAL STUDY OF MALE HUMANS CONTINUALLY EXPOSED TO ESTIMATED TWA CONCENTRATIONS OF 30-125 PPM FOR UP TO 30 YEARS INDICATED NO INCREASE IN MORTALITY COMPARED TO THE GENERAL MALE HUMAN POPULATION.

## -----PERSONAL PROTECTION-----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: NIOSH-APPROVED CANNISTER RESPIRATOR IN THE ABSENCE OF ADEQUATE ENVIRONMENTAL CONTROLS AT THE POINT OF USE.

MK095940

METHYLENE CHLORIDE MIXTURE

REVISION OF: 02/18/86

EYE PROTECTION: CHEMICAL GOGGLES.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

## -----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: NONE TO BOILING      FLAMMABLE LIMITS IN AIR, %  
METHOD USED: N/A      (EST)      LOWER: 15      UPPER: 22.0  
EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: WATER WILL EXTRACT A FLAMMABLE CO-SOLVENT WHICH WILL FORM A FLAMMABLE SUPERNATANT LAYER. EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE VAPORS DECOMPOSE TO HAZARDOUS PRODUCTS AT HIGH TEMPERATURES.

## -----HAZARDOUS REACTIVITY-----

STABILITY: STABLE      POLYMERIZATION: WILL NOT OCCUR  
CONDITIONS TO AVOID: OPEN FLAMES, WELDING ARCS, OR OTHER HIGH TEMPERATURE SOURCES WHICH MAY INDUCE THERMAL DECOMPOSITION.

MATERIALS TO AVOID: ALKALIS, OXIDIZING MATERIALS, WATER, MOIST AIR, ALUMINUM AND ALKALI METALS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CHLORIDE, CHLORINE, OR PHOSGENE.

## -----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE IN CASE OF SPILL OR LEAK: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER GLOVES, RUBBER APRON, CHEMICAL GOGGLES, AND RESPIRATOR. CONTAIN AND CLEAN UP SPILL. REMOVE IGNITION SOURCES. FOR SMALL SPILLS OR DRIES, PUT IN DRY DRUM OR BAG AND DISPOSE OF IN DOT-APPROVED WASTE

MK095941

MATERIAL SAFETY DATA SHEET

PG 5

METHYLENE CHLORIDE MIXTUR

REVISION OF: 02/18/86

CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER ABSORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS OR ABSORB WITH SORBENT MATERIAL AND PLACE THE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY PLACE. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

OTHER PRECAUTIONS: COMPONENTS OF THIS MIXTURE ARE VOLATILE AND WILL EVAPORATE IF THE CONTAINER IS LEFT OPEN OR IF IT IS STORED IN WARM PLACES. THIS WILL CHANGE THE COMPOSITION OF THIS MIXTURE AND THE RESULTING SOLUTION MAY NO LONGER BE SUITABLE FOR ITS INTENDED USE OR IT MAY HAVE DIFFERENT HAZARDOUS PROPERTIES THAN THOSE DESCRIBED HERE. OBSERVE THE STORAGE ADVICE TO MINIMIZE EVAPORATION.

OTHER PRECAUTIONS: VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW PLACES, SUCH AS PITS OR DEGREASERS, OR OTHER POORLY VENTILATED AREAS. DO NOT ENTER PLACES WHERE VAPORS ARE SUSPECTED UNLESS SPECIAL RESPIRATORY PROTECTION IS WORN AND AN OBSERVER IS PRESENT.

-----FOR ADDITIONAL INFORMATION-----

MK095942

MATERIAL SAFETY DATA SHEET

PG 6

METHYLENE CHLORIDE MIXTUR

REVISION OF: 02/18/86

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)983-9214

-----NOTICE-----

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

-----REVISION-----

02/86: ADDED COMPONENTS TO HAZARDOUS INGREDIENTS SECTION. REVISED FIRST AID MEASURES.

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END OF MSDS

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FORMALDEHYDE SOLUTION

REVISION OF: 02/14/86

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

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EMERGENCY ASSISTANCE

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FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9300.

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FOR PRODUCT AND SALES INFORMATION

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CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

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PRODUCT IDENTIFICATION

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PRODUCT NAME: FORMALDEHYDE SOLUTION LM CAS NO.: 50-00-0  
COMMON NAMES/SYNONYMS: FORMALDEHYDE; MCKESSON CODE: T1228013  
METHYLENE OXIDE; FORMALIN; METHYLENE GLYCOL

FORMULA:  $\text{H}(\text{OCH}_2)\text{NOH}$   
HAZARD RATING (NFPA 704)

HEALTH: 2

FIRE: 2

REACTIVITY: 0

SPECIAL: NONE

DATE ISSUED: 02/86

SUPERCEDES: 11/85

HAZARD RATING SCALE:

0-MINIMAL 8-SERIOUS

1-SLIGHT 4-SEVERE

2-MODERATE

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HAZARDOUS INGREDIENTS

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| COMPONENT    | EXPOSURE LIMITS, PPM |          |           |                 | HAZARD                    |
|--------------|----------------------|----------|-----------|-----------------|---------------------------|
|              | %                    | OSHA PEL | ACGIH TLV | OTHER LIMIT     |                           |
| FORMALDEHYDE | 87-52                | 8        | 2         | 1<br>(CELANESE) | COMBUSTIBLE;<br>CORROSIVE |
| METHANOL     | 1-1.5                | 200      | 200       | NONE            | FLAMMABLE;<br>TOXIC       |

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PHYSICAL PROPERTIES

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BOILING POINT, DEG F: 204-213 VAPOR PRESSURE, MM HG/20 DEG C: 47-58  
MELTING POINT, DEG F: <144 DEG F VAPOR DENSITY (AIR-1): 1.08  
MAY FORM PARA-FORMALDEHYDE  
SPECIFIC GRAVITY (WATER-1): 1.1-1.2 WATER SOLUBILITY, %: 100  
APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE-1): >1  
CLEAR, COLORLESS LIQUID; PUNGENT ODOR

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FIRST AID MEASURES

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IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET

## CAUSTIC SODA

REVISION OF: 02/14/86

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 30 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING WATER FOR 30 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

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HEALTH HAZARD INFORMATION

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PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

## SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: DUSTS ARE EXTREMELY CORROSIVE TO THE ENTIRE RESPIRATORY TRACT. BREATHING DUST CAN DESTROY THE MUCOUS MEMBRANES AND CAN CAUSE SEVERE PNEUMONITIS.

EYE CONTACT: DUSTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT CAUSES SEVERE EYE DAMAGE AND PROLONGED CONTACT CAUSES PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: DUSTS ARE EXTREMELY CORROSIVE TO THE SKIN AND RAPIDLY CAUSE SEVERE CHEMICAL BURNS. MOISTURE ON THE SKIN, SUCH AS FROM PERSPIRATION, WILL ACCELERATE TISSUE DESTRUCTION.

SWALLOWED: DUSTS OR SOLIDS ARE EXTREMELY CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING DUSTS OR SOLIDS CAUSES SEVERE AND RAPID BURNING OF THE MOUTH, THROAT, AND DIGESTIVE TRACT ACCOMPANIED BY SEVERE PAIN, VOMITING AND COLLAPSE. SOME EFFECTS MAY BE DELAYED.

CHRONIC EFFECTS OF EXPOSURE: MAY RESULT IN AREAS OF DESTRUCTION OF SKIN TISSUE OR PRIMARY IRRITANT DERMATITIS. SIMILARLY, INHALATION OF DUSTS, VAPORS, OR MISTS MAY CAUSE VARYING DEGREES OF DAMAGE TO THE AFFECTED TISSUES AND ALSO INCREASING SUSCEPTIBILITY TO RESPIRATORY ILLNESS.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN.

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TOXICITY DATA

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ORAL: RAT LD50-140-340 MG/KG

DERMAL: RABBIT LD50-1350 MG/KG

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN

CAUSTIC SODA

REVISION OF: 02/14/86

BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: A 1 MG SOLUTION IN THE EYE OF A RABBIT FOR 24 HRS PRODUCED SEVERE IRRITATION

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PERSONAL PROTECTION

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VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: NIOSH-APPROVED DUST RESPIRATOR OR MASK IN THE ABSENCE OF ADEQUATE ENVIRONMENTAL CONTROLS AT THE POINT OF USE.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACE SHIELD.

PROTECTIVE CLOTHING: ALKALI-RESISTANT SLICKER SUIT WITH RUBBER APRON, RUBBER BOOTS WITH PANTS OUTSIDE, AND RUBBER GLOVES WITH GAUNTLETS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

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FIRE AND EXPLOSION INFORMATION

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FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. CONTACT WITH WATER MAY GENERATE ENOUGH HEAT TO IGNITE COMBUSTIBLE MATERIALS

SPECIAL FIRE FIGHTING PROCEDURES: NONE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: THIS MATERIAL MELTS AT 590 DEG F. HOT MOLTEN MATERIAL WILL REACT VIOLENTLY WITH WATER RESULTING IN SPATTERING AND FUMING. THIS PRODUCT WILL REACT WITH METALS SUCH AS ALUMINUM, TIN, AND ZINC TO PRODUCE FLAMMABLE HYDROGEN GAS.

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HAZARDOUS REACTIVITY

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STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: KEEP WATER AND MOIST AIR OUT OF THE CONTAINER.

MATERIALS TO AVOID: ACIDS, COMBUSTIBLE MATERIALS, AND METALS SUCH AS ALUMINUM, TIN, GALVANIZED ZINC, BRASS, AND BRONZE. KEEP AWAY FROM ORGANIC HALOGEN COMPOUNDS, ESPECIALLY TRICHLOROETHYLENE.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

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SPILL, LEAK, AND DISPOSAL PROCEDURES

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ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND CHEMICAL GOGGLES. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

# MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

REVISION OF: 02/14/86

**DISPOSAL METHODS:** DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

**NOTE:** EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

## SPECIAL PRECAUTIONS

**STORAGE AND HANDLING PRECAUTIONS:** STORE IN A COOL, DRY PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

**REPAIR AND MAINTENANCE PRECAUTIONS:** DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER. HAZARDOUS CARBON MONOXIDE GAS CAN FORM UPON CONTACT WITH FOOD AND BEVERAGE PRODUCTS IN ENCLOSED SPACES AND CAN CAUSE DEATH. DO NOT ENTER TANKS WHEN SUCH CONTACT IS SUSPECTED UNLESS THE ABSENCE OF CARBON MONOXIDE HAS BEEN CONFIRMED BY TESTS.

**OTHER PRECAUTIONS:** THIS MATERIAL GENERATES CONSIDERABLE HEAT WHEN DISSOLVED IN WATER. WHEN MIXING WITH WATER ALWAYS ADD CAUSTIC SODA SLOWLY TO WATER AND STIR CONTINUOUSLY. NEVER ADD WATER TO CAUSTIC SODA.

**OTHER PRECAUTIONS:** CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

## FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)983-9214

## NOTICE

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

## REVISION

02/86: REVISED FIRST AID MEASURES.

0000002

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END OF MSDS

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## MATERIAL SAFETY DATA SHEET

PG 1

GLYCOL ETHER EE

REVISION OF: 09/11/86

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

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EMERGENCY ASSISTANCE

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FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9800.

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FOR PRODUCT AND SALES INFORMATION

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CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

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PRODUCT IDENTIFICATION

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PRODUCT NAME: GLYCOL ETHER EE CAS NO.: 110-80-6  
COMMON NAMES/SYNONYMS: ETHYLENE GLYCOL MCKESSON CODE: T1080  
MONOETHYL ETHER, 2-ETHOXYETHANOL; CELLOSOLVE (1) SOLVENT;  
DOWANOL (2) EE; POLY-SOLV (3) EE; OXITOL (4)

FORMULA: C4 H10 O2  
HAZARD RATING (NEPA 825M)  
HEALTH: 2  
FIRE: 2  
REACTIVITY: 0  
SPECIAL: NONE

DATE ISSUED: 09/86  
SUPERCEDES: 04/86  
HAZARD RATING SCALE:  
0-MINIMAL 3-SERIOUS  
1-SLIGHT 4-SEVERE  
2-MODERATE

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HAZARDOUS INGREDIENTS

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| COMPONENT                        | %   | EXPOSURE LIMITS, PPM |             |             | HAZARD                          |
|----------------------------------|-----|----------------------|-------------|-------------|---------------------------------|
|                                  |     | OSHA PEL             | ACGIH TLV   | OTHER LIMIT |                                 |
| ETHYLENE GLYCOL MONO-ETHYL ETHER | >99 | 200<br>(SKIN)        | 5<br>(SKIN) | SEE BELOW   | COMBUSTIBLE;<br>TOXIC; IRRITANT |

UNION CARBIDE RECOMMENDATION:  
PERSONAL EXPOSURE LIMIT 5 PPM (8 HR TWA),  
AVOID ALL SKIN CONTACT

- (1) TRADEMARK OF UNION CARBIDE CORPORATION
- (2) TRADEMARK OF THE DOW CHEMICAL COMPANY
- (3) TRADEMARK OF OLIN CORPORATION
- (4) TRADEMARK OF SHELL CHEMICAL COMPANY

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PHYSICAL PROPERTIES

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BOILING POINT, DEG F: 276 VAPOR PRESSURE, MM HG/20 DEG C: 4  
MELTING POINT, DEG F: -180 VAPOR DENSITY (AIR-1): 2.1  
SPECIFIC GRAVITY (WATER-1): 0.981 WATER SOLUBILITY, %: 100  
APPEARANCE AND ODOR: CLEAR, EVAPORATION RATE (BUTYL ACETATE-1): 0.4  
COLORLESS LIQUID; MILD ODOR

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FIRST AID MEASURES

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IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

MK073503

## MATERIAL SAFETY DATA SHEET

PG 2

GLYCOL ETHER EE

REVISION OF: 09/11/86

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING. DESTROY CONTAMINATED LEATHER ARTICLES.

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING TO AN UNCONSCIOUS OR CONVULSING PERSON.

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HEALTH HAZARD INFORMATION

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PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

## SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS ARE IRRITATING TO THE EYES, NOSE, AND RESPIRATORY TRACT. OVEREXPOSURE MAY RESULT IN HEADACHE, NAUSEA, AND VOMITING. VAPORS HAVE AN OBJECTIONABLE ODOR AND MAY PRODUCE LIVER, KIDNEY, AND BLOOD FORMING ORGAN DAMAGE.

EYE CONTACT: CAUSES IRRITATION.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. PROLONGED OR WIDESPREAD CONTACT WITH SKIN MAY LEAD TO ABSORPTION OF HARMFUL AMOUNTS WITH ACCOMPANYING SIGNS AND SYMPTOMS OF TOXICITY AS DESCRIBED FOR SWALLOWING.

SWALLOWED: MAY CAUSE HEADACHE, NAUSEA, VOMITING, DIZZINESS AND WEAKNESS. SWALLOWING LARGE QUANTITIES MAY CAUSE KIDNEY, LIVER, AND BLOOD FORMING ORGAN DAMAGE.

CHRONIC EFFECTS OF EXPOSURE: REPEATED EXPOSURE TO HIGH CONCENTRATIONS (OVER 400 PPM) MAY CAUSE INJURY TO BONE MARROW AND BLOOD CELLS, KIDNEYS, LIVER, AND TESTES. SIGNS AND SYMPTOMS OF DAMAGE TO BONE MARROW/BLOOD CELLS INCLUDE EASY TIRING AND PALLOR. SIGNS AND SYMPTOMS OF KIDNEY DAMAGE INCLUDE CHANGES IN URINE OUTPUT AND APPEARANCE OR EDEMA. SIGNS AND SYMPTOMS OF LIVER DAMAGE INCLUDE LOSS OF APPETITE, JAUNDICE, AND SOMETIMES PAIN IN THE UPPER ABDOMEN ON THE RIGHT SIDE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PRE-EXISTING SKIN, EYE AND RESPIRATORY DISORDERS OR IMPAIRED LIVER, KIDNEY, OR BLOOD FORMING ORGAN FUNCTIONS MAY BE AGGRAVATED BY EXPOSURE.

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TOXICITY DATA

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ORAL: RAT LD50 - 8,000 MG/KG

DERMAL: RABBIT LD50 - 3,500 MG/KG

MK073504

## MATERIAL SAFETY DATA SHEET

PG 8

GLYCOL ETHER EE

REVISION OF: 09/11/86

INHALATION: MOUSE LC50 - 1,820 PPM/7HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: IN LABORATORY INHALATION STUDIES, BIRTH DEFECTS, INCREASED FETAL LETHALITY, AND DELAYED FETAL DEVELOPMENT HAVE BEEN OBSERVED IN THE OFFSPRING OF FEMALE ANIMALS EXPOSED DURING PREGNANCY, WITH AN APPARENT THRESHOLD RESPONSE LEVEL IN THE RANGE OF 150-250 PPM CONCENTRATION IN THE AIR. DERMAL EXPOSURE OF PREGNANT RATS TO LARGE DOSES CAUSED FETAL TOXICITY AND MAY HAVE CAUSED BIRTH DEFECTS. ORAL EXPOSURE TO MALE RATS CAUSED TESTICULAR TOXICITY BUT ONLY AFTER REPEATED DAILY DOSES EXCEEDING 250 MG/KG.

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PERSONAL PROTECTION

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VENTILATION: THIS PRODUCT SHOULD BE HANDLED IN COVERED EQUIPMENT, IN WHICH CASE GENERAL (MECHANICAL) ROOM VENTILATION IS EXPECTED TO BE SATISFACTORY. SPECIAL, LOCAL VENTILATION IS RECOMMENDED AT POINTS WHERE VAPORS CAN BE EXPECTED TO ESCAPE TO THE WORKPLACE AIR IN ORDER TO MAINTAIN EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

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FIRE AND EXPLOSION INFORMATION

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FLASH POINT, DEG F: 108

FLAMMABLE LIMITS IN AIR, %

METHOD USED: TCC

LOWER: 1.7 UPPER: 15.6

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

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HAZARDOUS REACTIVITY

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STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MK073505

## MATERIAL SAFETY DATA SHEET

PG 4

GLYCOL ETHER EE

REVISION OF: 09/11/86

MATERIALS TO AVOID: ALKALIS, OXIDIZING MATERIALS, WATER, AND MOIST AIR.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE AND CARBON DIOXIDE.

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SPILL, LEAK, AND DISPOSAL PROCEDURES

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ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL AND PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

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SPECIAL PRECAUTIONS

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HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. DO NOT STORE IN ALUMINUM CONTAINERS. DO NOT BREATHE VAPORS.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL. NOT FOR USE IN CONSUMER PRODUCTS.

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FOR ADDITIONAL INFORMATION

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CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)988-9214

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NOTICE

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MK073506

MKIL183284

## MATERIAL SAFETY DATA SHEET

PG 5

GLYCOL ETHER EE

REVISION OF: 09/11/86

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

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REVISION

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0000002

09/86: ADDED SYNONYMS. CORRECTED NFPA REFERENCE. EXPANDED INSTRUCTION FOR CONTAMINATED CLOTHING, VENTILATION, RESPIRATORY, AND EYE PROTECTION. REVISED FIRE FIGHTING INFORMATION, SPILL AND LEAK PROCEDURES, AND HANDLING ADVICE.

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END OF MSDS

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MK073507

CHLOROFORM

REVISION OF: 02/14/86

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

## EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9300.

## FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

## PRODUCT IDENTIFICATION

PRODUCT NAME: CHLOROFORM

CAS NO.: 67-66-8

COMMON NAMES/SYNONYMS: CHLOROFORM;

MCKESSON CODE: T2858

TRICHLOROMETHANE

DATE ISSUED: 02/86

HAZARD RATING (NFPA 704)

SUPERCEDES: 11/85

HEALTH: 2

HAZARD RATING SCALE:

FIRE: 0

0-MINIMAL 8-SERIOUS

REACTIVITY: 0

1-SLIGHT 4-SEVERE

SPECIAL: NONE

2-MODERATE

## HAZARDOUS INGREDIENTS

## EXPOSURE LIMITS, PPM

| COMPONENT  | %   | OSHA ACGIH OTHER |     |       | HAZARD     |
|------------|-----|------------------|-----|-------|------------|
|            |     | PEL              | TLV | LIMIT |            |
| CHLOROFORM | >99 | 50               | 10  | NONE  | CARCINOGEN |

## PHYSICAL PROPERTIES

BOILING POINT, DEG F: 142 VAPOR PRESSURE, MM HG/20 DEG C: 160  
MELTING POINT, DEG F: -82 VAPOR DENSITY (AIR-1): 4.1  
SPECIFIC GRAVITY (WATER-1): 1.49 WATER SOLUBILITY, %: 0.8  
APPEARANCE AND ODOR: CLEAR, EVAPORATION RATE (BUTYL ACETATE-1): 11.6  
COLORLESS LIQUID; MILDLY SWEET ODOR

## FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON

MK095866

CHLOROFORM

REVISION OF: 02/14/86

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**HEALTH HAZARD INFORMATION**

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**PRIMARY ROUTES OF EXPOSURE:** INHALATION, SKIN OR EYE CONTACT.

**SIGNS AND SYMPTOMS OF EXPOSURE**

**INHALATION:** CHLOROFORM IS A POTENT ANESTHETIC. ACUTE OVEREXPOSURE CAN CAUSE NAUSEA, VOMITING, DROWSINESS, HEADACHE AND DIZZINESS, UNCONSCIOUSNESS, AND EVEN DEATH IN EXTREME CASES. SUBSEQUENT LIVER AND KIDNEY DAMAGE MAY RESULT FROM BOTH ACUTE AND CHRONIC OVEREXPOSURE.

**EYE CONTACT:** LIQUID AND MIST MAY IRRITATE THE EYES, WITH SLIGHT CORNEAL INJURY POSSIBLE. MAY CAUSE CONJUNCTIVITIS.

**SKIN CONTACT:** BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS.

**SWALLOWED:** SWALLOWING IS FOLLOWED IMMEDIATELY BY SEVERE BURNING OF THE MOUTH AND THROAT, PAIN IN THE CHEST, AND VOMITING. LIVER DAMAGE CAN RESULT.

**CHRONIC EFFECTS OF EXPOSURE:** PROLONGED OR REPEATED OVEREXPOSURE MAY RESULT IN DELAYED LIVER AND/OR KIDNEY DAMAGE. OVEREXPOSURE MAY INCREASE RISK OF CANCER.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:** SKIN DISORDERS OR IMPAIRED LIVER, KIDNEY, OR RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF CHLOROFORM.

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**TOXICITY DATA**

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**ORAL:** RAT LD50 - 800 MG/KG; HUMAN LDLO - 140 MG/KG

**DERMAL:** 10 MG ON OPEN RABBIT SKIN PRODUCED MILD IRRITATION AFTER 24H.

**INHALATION:** RAT LCLO - 8,000 PPM / 4H

**CARCINOGENICITY:** CHLOROFORM IS LISTED AS A POTENTIAL CARCINOGEN IN THE NTP THIRD ANNUAL REPORT ON CARCINOGENS AND IN THE IARC MONOGRAPHS, BUT IS NOT CURRENTLY REGULATED AS A CARCINOGEN BY OSHA.

**OTHER DATA:** NONE

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**PERSONAL PROTECTION**

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**VENTILATION:** LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

**RESPIRATORY PROTECTION:** NIOSH-APPROVED CANNISTER RESPIRATOR IN THE ABSENCE OF ADEQUATE ENVIRONMENTAL CONTROLS AT THE POINT OF USE.

**EYE PROTECTION:** CHEMICAL GOGGLES.

**PROTECTIVE CLOTHING:** LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

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MKIL192601

CHLOROFORM

REVISION OF: 02/14/86

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

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**FIRE AND EXPLOSION INFORMATION**

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FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE VAPORS DECOMPOSE TO HAZARDOUS PRODUCTS AT HIGH TEMPERATURES.

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**HAZARDOUS REACTIVITY**

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STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: OPEN FLAMES, WELDING ARCS, OR OTHER HIGH TEMPERATURE SOURCES WHICH MAY INDUCE THERMAL DECOMPOSITION. AVOID EXPOSURE TO AIR AND SUNLIGHT.

MATERIALS TO AVOID: ALKALIS, OXIDIZING MATERIALS, WATER, AND MOIST AIR.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CHLORIDE, CHLORINE, OR PHOSGENE.

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**SPILL, LEAK, AND DISPOSAL PROCEDURES**

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ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, CHEMICAL GOGGLES, AND RESPIRATORY PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER ABSORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS OR ABSORB WITH SORBENT MATERIAL AND PLACE THE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.

COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

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**SPECIAL PRECAUTIONS**

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STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY PLACE. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE

MK095868

MKIL192602

MATERIAL SAFETY DATA SHEET

PG 4

CHLOROFORM

REVISION OF: 02/14/86

PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

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FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)988-9214

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NOTICE

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REVISION

0000002

02/86: REVISED FIRST AID MEASURES.

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END OF MSDS

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MK095869

MKIL192603

**HYDROGEN PEROXIDE**

REVISION OF: / /

MCKESSON CHEMICAL COMPANY

SAN FRANCISCO BRANCH

33950 7TH STREET  
UNION CITY CA 94587

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

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EMERGENCY ASSISTANCE

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FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9300.

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FOR PRODUCT AND SALES INFORMATION

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CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

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PRODUCT IDENTIFICATION

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PRODUCT NAME: **[REDACTED]**

CAS NO.: 7722-84-1

COMMON NAMES/SYNONYMS: HYDROGEN PEROXIDE MCKESSON CODE: T1124  
SOLUTION; ALBONE (R) 35, 50, 35CG, 50CG, M;  
KASTONE (R); PERONE (R) 30, 35, 50;  
TYSUL (R) S, WW35, WW50  
(R) TRADEMARK OF DUPONTFORMULA: H2 O2  
HAZARD RATING (NFPA 704)  
HEALTH: 2  
FIRE: 0  
REACTIVITY: 1  
SPECIAL: OXYDATE ISSUED: 02/86  
SUPERCEDES: 11/85  
HAZARD RATING SCALE:  
0-MINIMAL 3-SERIOUS  
1-SLIGHT 4-SEVERE  
2-MODERATE

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HAZARDOUS INGREDIENTS

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| COMPONENT         | %       | EXPOSURE LIMITS, PPM |           |             | HAZARD   |
|-------------------|---------|----------------------|-----------|-------------|----------|
|                   |         | OSHA PEL             | ACGIH TLV | OTHER LIMIT |          |
| HYDROGEN PEROXIDE | 30-52   | 1(90%)               | 1         | NONE        | OXIDIZER |
| WATER             | BALANCE | NONE                 | NONE      | NONE        | NONE     |

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PHYSICAL PROPERTIES

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BOILING POINT, DEG F:  
A-222; B-220; C-226; D-237  
MELTING POINT, DEG F:

VAPOR PRESSURE, MM HG/20 DEG C: 18-24

VAPOR DENSITY (AIR-1): N/A

HYDROGEN PEROXIDE

REVISION OF: 02/14/86

A--15; B--19; C--27; D--62

SPECIFIC GRAVITY (WATER-1):

WATER SOLUBILITY, %: 100

A-1.112; B-1.11; C-1.133; D-1.196

APPEARANCE AND ODOR:

EVAPORATION RATE (BUTYL ACETATE-1): &gt;1

CLEAR, COLORLESS LIQUID; NO ODOR

A-30%; B-31%; C-35%; D-50%

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FIRST AID MEASURES

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IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLOOD SKIN WITH LOTS OF RUNNING WATER FOR 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER FLOODING. DESTROY CONTAMINATED CLOTHING AND SHOES.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

NOTE TO PHYSICIAN: INSERT A GASTRIC TUBE TO PREVENT INCREASED PRESSURE THAT MAY RESULT FROM THE RAPID EVOLUTION OF OXYGEN.

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HEALTH HAZARD INFORMATION

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PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT, INHALATION.

## SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS SEVERELY IRRITATE THE NOSE AND THROAT.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES. THIS PRODUCT IS CORROSIVE TO THE EYES AND ITS EFFECTS MAY BE DELAYED.

SKIN CONTACT: BRIEF EXPOSURE WILL IRRITATE THE SKIN. LONGER EXPOSURE CAUSES IRRITATION, BLISTERS, AND BURNS.

SWALLOWED: THE LIQUID IS SEVERELY IRRITATING TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID MAY CAUSE A SUDDEN EVOLUTION OF OXYGEN, WHICH CAN CAUSE INJURY BY DISTENSION OF THE ESOPHAGUS OR STOMACH. LOCAL INTERNAL BLEEDING MAY RESULT.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN.

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TOXICITY DATA

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ORAL: NO DATA FOUND

HYDROGEN PEROXIDE

REVISION OF: 02/14/86

DERMAL: RAT LD50-4060 MG/KG FOR 90% H2 O2

INHALATION: RAT LC50-2000 MG/M3/4HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

---

**PERSONAL PROTECTION**

---

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: NIOSH-APPROVED CANNISTER RESPIRATOR IN THE ABSENCE OF ADEQUATE ENVIRONMENTAL CONTROLS AT THE POINT OF USE.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACE SHIELD.

PROTECTIVE CLOTHING: POLYESTER OR ACRYLIC FULL BODY COVERING CLOTHING. RUBBER OR NEOPRENE BOOTS AND GLOVES, AND HARD HAT WITH BRIM. DO NOT WEAR LEATHER SHOES OR SHOES THAT ARE CRACKED, SUEDE, OR OTHER POROUS MATERIALS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

---

**FIRE AND EXPLOSION INFORMATION**

---

FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: FLOOD WITH WATER.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE. FLOOD WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS: THIS PRODUCT MAY CAUSE A FIRE IF IT DRIES ON CLOTHING, WOOD, OR OTHER COMBUSTIBLES. CONTACT WITH FLAMMABLE LIQUIDS OR VAPORS MAY CAUSE IMMEDIATE FIRE OR EXPLOSION, ESPECIALLY IF HEATED, OR IT MAY RESULT IN A DELAYED EXPLOSION.

---

**HAZARDOUS REACTIVITY**

---

STABILITY: UNSTABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: EXCESSIVE HEAT AND CONTAMINATION OF ANY KIND.

MATERIALS TO AVOID: REDUCING AGENTS, COMBUSTIBLE MATERIALS SUCH AS WOOD, CLOTH, OR ORGANIC MATERIALS, METALS SUCH AS IRON AND COPPER AND THEIR ALLOYS, AND DIRT.

HAZARDOUS DECOMPOSITION PRODUCTS: RELEASES OXYGEN GAS WHICH, IN A CONFINED SPACE, WILL INCREASE EXPLOSIVE LIMITS AND BURNING RATE OF FLAMMABLE VAPORS. DECOMPOSITION WILL ALSO RESULT IN DANGEROUS PRESSURE

HYDROGEN PEROXIDE

REVISION OF: 02/14/86

INCREASES WITHIN CONTAINERS OR STORAGE VESSELS.

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**SPILL, LEAK, AND DISPOSAL PROCEDURES**

---

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR POLYESTER OR ACRYLIC BODY-COVERING CLOTHING AND RUBBER BOOTS, RUBBER APRON, RUBBER GLOVES, AND HARD HAT WITH BRIM. CONTAIN BY DIKING WITH SOIL OR OTHER INORGANIC SORBENT AND DILUTE WITH LOTS OF WATER. PUMP INTO DOT-APPROVED WASTE CONTAINERS OR ABSORB WITH SOIL AND PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

---

**SPECIAL PRECAUTIONS**

---

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. STORE ONLY IN A PROPERLY VENTED CONTAINER OR APPROVED BULK STORAGE FACILITY. DO NOT BLOCK VENT IN BUNG CAP. NEVER ADD ANY OTHER PRODUCT TO CONTAINER. NEVER RETURN UNUSED PEROXIDE TO ORIGINAL CONTAINER.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

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**FOR ADDITIONAL INFORMATION**

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CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)983-9214

---

**NOTICE**

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ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO

HYDROGEN PEROXIDE

REVISION OF: 02/14/86

BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC  
ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT  
REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC  
MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH  
ANY OTHER MATERIAL OR IN ANY PROCESS.

-----REVISION----- 0000002  
02/86: REVISED FIRST AID MEASURES.

\*\*\*\*\*

END OF MSDS

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# MATERIAL SAFETY DATA SHEET

MSD 134

MANUFACTURER: McKesson Chemical Company  
5353 Jillson Street  
Los Angeles, CA 90040

DATE: 1283N

PRODUCT NAME: SWISS BLEND #1

EMERGENCY TELEPHONE NUMBER: (213)269-9531 for McKesson/Los Angeles 8AM - 5PM PT,  
M-F. (800) 424-9300 for CHEMTREC 24 hr per day.

CHEMICAL FAMILY: Mixture of chlorinated aliphatic hydrocarbons.

| INGREDIENTS:       | FORMULA:                 | : % : Volume |
|--------------------|--------------------------|--------------|
| Methylene Chloride | $\text{CH}_2\text{Cl}_2$ | 80           |
| Perchloroethylene  | $\text{C}_2\text{Cl}_4$  | 20           |

See also Page 3.

## SECTION 1

## PHYSICAL DATA

|  |  |
|--|--|
| BOILING POINT ( $^{\circ}\text{F}$ ): 108            | SOLUBILITY IN WATER (WEIGHT %): 41**     |
| VAPOR PRESSURE (mm Hg): 294/20 $^{\circ}\text{C}$ ** | SPECIFIC GRAVITY (WATER=1): 1.38**       |
| VAPOR DENSITY (AIR=1): 3.3**                         | VOLATILES (VOLUME %): Essentially 100    |
|  | EVAPORATION RATE (BUTYL ACETATE=1): >1** |

APPEARANCE AND ODOR: Colorless liquid, mild odor.

\*\*If indicated, the Physical Data for this mixture have been calculated from its component data and accepted chemical formulas.\*\*

## SECTION 2

## FIRE AND EXPLOSION HAZARD DATA

|  |                               |
|--|-------------------------------|
| FLASH POINT ( $^{\circ}\text{F}$ ): None   | FLAMMABLE LIMITS (estimated): |
| METHOD USED: Closed Cup  | LEL: 1 UEL: 22                |
| EXTINGUISHING MEDIA: $\text{CO}_2$ or water fog.   |                               |
| SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NIOSH approved self-contained respiratory equipment should be worn. |                               |
| UNUSUAL FIRE AND EXPLOSION HAZARDS: May liberate hydrogen chloride, phosgene or chlorine if burned.              |                               |

## SECTION 3

## HEALTH HAZARD DATA

TLV: Methylene Chloride=200ppm; Perchloroethylene= 50ppm.

EFFECTS OF OVEREXPOSURE --See page 3--

INGESTION: Low in single dose oral toxicity, although may cause vomiting.  
EYE CONTACT: May cause pain and irritation and possible corneal injury.  
INHALATION: Anesthetic effects. Can cause death if too much breathed.  
SKIN CONTACT: (See page 3)

## SECTION 4

## FIRST AID PROCEDURES

Remove contaminated clothing as soon as possible.

|             |  |   |
|-------------|--|---|
| EYES:       | Immediately water flush for 15 min. holding eyelids apart. | Get medic attention                         |
| SKIN:       | Wash with lots of running water.                           | Get medical attention if irritation occurs. |
| INHALATION: | (See page 3)   |   |
| INGESTION:  | (See page 3)   |   |

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SECTION 5REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Avoid open flames, welding arcs or other high temperature sources which induce thermal decomposition.

INCOMPATIBILITY: Water will slowly produce corrosive acid.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and small amounts of phosgene and chlorine

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

---

SECTION 6SPILL OR LEAK PROCEDURES

ACTION TO TAKE FOR SPILLS:  
Keep from water supply or ground.  
Wear appropriate protective equipment.

SMALL: Absorb onto rags or sand. Transfer to closed container

LARGE: Evacuate area, contain. Pump into closed containers or absorb onto sand.

WASTE DISPOSAL METHOD:

Send to reclaimer. Observe all governmental regulations during disposal.

---

SECTION 7SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust and/or mechanical ventilation to limit concentration in air to less than the lowest TLV.

RESPIRATORY PROTECTION: (See page 3)

PROTECTIVE CLOTHING:

Body covering clothing. Rubber or vinyl-coated gloves and apron.

EYE PROTECTION: Chemical goggles.

OTHER PROTECTIVE EQUIPMENT: Eyewash and safety shower nearby.

---

SECTION 8SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry place. Do not breathe vapors. Vapors are heavier than air and will collect in low places. Do not enter these areas unless special breathing apparatus is used and an observer is present.

OTHER PRECAUTIONS:

See also Page 3.

LABELLING INSTRUCTIONS:

Warning! Harmful If Inhaled.  
Vapor May Be Harmful.  
Can Cause Death If Too Much Breathed.  
Avoid Skin Contact and Breathing Vapors.  
Do Not Take Internally.  
Use Only With Adequate Ventilation.  
Keep Out of Reach of Children.  
For Manufacturing Use Only.

JS 032918

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MKIL05684

Material Safety Data Shee  
McKesson Chemical  
MSD 134 -- Swiss Blend #1  
Page Three

### Section 3 -- Health Hazard Data

Skin Contact: Short contact: no irritation expected. Prolonged  
or repeated contact: will irritate and may burn.  
If confined to the skin: will burn.

The U.S. National Cancer Institute has determined that perchloro-  
ethylene, a component of this mixture, causes cancer in some  
animals.

### Section 4 -- First Aid Procedures

Inhalation: Remove to fresh air. Give artificial respiration if  
breathing has stopped but never to an unconscious or  
convulsing patient. Get medical attention.

Ingestion: Do not induce vomiting. Get medical attention  
immediately.

### Section 7 -- Special Protection Information

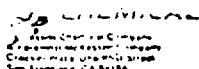
Respiratory Protection: NIOSH-approved respiratory protection in  
addition to engineering controls. For  
concentrations in air up to 2% an approved  
cannister respirator is acceptable. For  
concentrations above 2% and for emergencies  
a self-contained breathing apparatus is  
recommended.

### Section 1 -- Ingredients and Section 8 -- Special Precautions

Components of this mixture are volatile and will evaporate if the container is  
left open. Evaporation will be accelerated by higher temperatures. Under these  
conditions the composition of this mixture will change and hence, the information  
presented herein may not correctly describe the resulting mixture. Observe the  
Storage and Handling precautions to minimize evaporation.

JS 032919

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# MATERIAL SAFETY DATA SHEET

MSD153

MANUFACTURER: McKESSON CHEMICAL COMPANY  
9005 Sorensen Avenue  
Santa Fe Springs, CA 90670

DATE: 0384R1

PRODUCT NAME: CHELACLEAN 103B

EMERGENCY TELEPHONE NUMBER: (213) 946-6491 for McKesson Chemical Company/Santa fe Sprir.  
8 AM - 5PM, PT, M-F. (800) 424-9300 for Chemtrec 24 hr per day.

CHEMICAL FAMILY: Mixture of an alkali and sequestrants.

| INGREDIENTS:                                  | FORMULA:  | % : Weight |
|---|---|------------|
| 50% Liquid Sodium Hydroxide                   | NaOH  | 91.0       |
| Water   | H <sub>2</sub> O  | 6.24       |
| Sodium Gluconate                              | C <sub>6</sub> H <sub>11</sub> O <sub>7</sub> Na              | 1.26       |
| Dequest (R) 2000<br>(R) Trademark of Monsanto | C <sub>3</sub> H <sub>12</sub> O <sub>9</sub> NP <sub>3</sub> | 1.50       |

SECTION 1PHYSICAL DATA

BOILING POINT (°F): 290  
VAPOR PRESSURE (mm Hg): 1/20°C  
VAPOR DENSITY (AIR=1): N/A

SOLUBILITY IN WATER (WEIGHT %): Complete  
SPECIFIC GRAVITY (WATER=1): 1.5  
VOLATILES (VOLUME %): non-volatile  
EVAPORATION RATE (BUTYL ACETATE=1): N/A

APPEARANCE AND ODOR: Clear, viscous solution

\*\*If indicated, the Physical Data for this mixture have been calculated from its component data and accepted chemical formulas.\*\*

SECTION 2FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (°F): None  
METHOD USED: --

FLAMMABLE LIMITS (estimated):  
LEL: N/A UEL: N/A

EXTINGUISHING MEDIA: Non-combustible

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: Liquid sodium hydroxide can react with some metals, such as aluminum, liberating hydrogen which is flammable and/or explosive.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION 3HEALTH HAZARD DATA

TLV: Sodium Hydroxide = 2mg/cu.m.; water, sodium gluconate, Dequest (R)  
2000 = not established.

EFFECTS OF OVEREXPOSURE

INGESTION: Causes severe burns and tissue destruction.  
EYE CONTACT: Causes severe burns and possible blindness.  
INHALATION: (See page 3)  
SKIN CONTACT: Causes severe burns.

SECTION 4FIRST AID PROCEDURES

Remove contaminated clothing as soon as possible.  
EYES: Immediately flush with plenty of running water for at least 30 min. get immediate medical attention.  
SKIN: (See page 3)  
INHALATION: (See page 3)  
INGESTION: (See page 3)

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SECTION 5REACTIVITY DATA

**STABILITY:** Stable but absorbs carbon dioxide from the air.  
**CONDITIONS TO AVOID:**

**INCOMPATIBILITY:** Acids, hot water, many organic chemicals, amphoteric metals such as aluminum.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None

**HAZARDOUS POLYMERIZATION:** Will not occur.  
**CONDITIONS TO AVOID:**

---

SECTION 6SPILL OR LEAK PROCEDURES

**ACTION TO TAKE FOR SPILLS:**  
Keep from ground, sewer, or storm drain. Wear complete protective equipment.

**SMALL:** Mop or wipe up. Neutralize with dilute acid.

**LARGE:** Contain, neutralize with dilute acid, flush residue with plenty of water.

**WASTE DISPOSAL METHOD:** Observe all governmental regulations during disposal.

---

SECTION 7SPECIAL PROTECTION INFORMATION

**VENTILATION:** Local exhaust and/or mechanical ventilation to limit concentration in air to less than 2 mg/cu.m.

**RESPIRATORY PROTECTION:** NIOSH-approved respirator in the absence of engineering controls.

**PROTECTIVE CLOTHING:** Body-covering clothing, hard hat, rubber apron extending below boot tops, rubber gloves with gauntlets.

**EYE PROTECTION:** Chemical goggles and face shield.

**OTHER PROTECTIVE EQUIPMENT:** Eyewash and safety shower nearby.

---

SECTION 8SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:** Do not store near acids. Product is viscous and very slippery. Store at temperature above 60°F.

**OTHER PRECAUTIONS:**

**LABELLING INSTRUCTIONS:**

DANGER! CORROSIVE  
Causes Severe Burns  
Do Not Get In Eyes, On Skin, Or On Clothing  
Avoid Breathing Mists or Sprays  
Do Not Take Internally  
Wear Complete Protective Equipment  
For Manufacturing Use Only  
Keep Away From Children

JS 032973

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Section 3 -- Health Hazard Data

Inhalation: Mist or spray will severely burn the nose, mouth, and throat and may cause chemical pneumonia.

Section 4 -- First Aid Procedures

Skin: Immediately wash with lots of running water for at least 15 minutes. Get immediate medical attention.

Inhalation: Remove to fresh air. Give artificial respiration if overcome by vapors but never to an unconscious or convulsing patient. Get immediate medical attention.

Ingestion: Do not induce vomiting. Give plenty of water or milk and get immediate medical attention.

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McKesson Corporation Chemical Group  
McKesson EnviroSystems Company  
One Post Street - Crocker Plaza  
San Francisco, CA 94104



Page 1 of 4

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M A T E R I A L   S A F E T Y   D A T A   S H E E T   #1001

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MANUFACTURER: McKesson EnviroSystems Company

DATE: 10/82

PRODUCT NAME: AP-82

EMERGENCY TELEPHONE NUMBER: (219) 424-1940 for McKesson EnviroSystems  
between 8am-5pm ET. (800) 424-9300 for Chemtrec 24Hr all day.

CHEMICAL FAMILY: MIXTURE OF CHLORINATED HYDROCARBONS AND AN ALIPHATIC  
ALCOHOL.

INGREDIENTS:

FORMULA:

: % :

Methylene Chloride  
Methanol

$\text{CH}_2\text{Cl}_2$        $\text{CH}_4\text{O}$

greater than 80  
min. 10

Low molecular weight alcohols, esters and aromatic hydrocarbons (other  
than benzene) - Less than 10%.

See Addendum--pg 4

---

SECTION I - PHYSICAL DATA

BOILING POINT ( $^{\circ}\text{F}$ ): 104-243

SOLUBILITY IN WATER (wt. %): 5\*\*

VAPOR PRESSURE (mm Hg): 369/25 $^{\circ}\text{C}$ \*\* SPECIFIC GRAVITY (water = 1): 1.27

VAPOR DENSITY (air = 1): 2.5\*\* VOLATILES (volume %): 100

EVAPORATION RATE (butyl acetate = 1): > 1\*\*

APPEARANCE & ODOR: Colorless liquid; mild odor.

\*\*

(If indicated, the physical data for this mixture have been calculated  
from its component data and accepted chemical formulas).

---

SECTION II - FIRE & EXPLOSION HAZARD DATA

FLASHPOINT ( $^{\circ}\text{F}$ ): None

FLAMMABLE LIMITS (est.):

METHOD USED: Tag closed cup

LEL: N/A

UEL: 28.0%

EXTINGUISHING MEDIA:  $\text{CO}_2$ ; dry chemical or water fog

SPECIAL FIRE FIGHTING EQUIPMENT & HAZARDS: NIOSH approved self-contained  
respiratory equipment should be worn.

UNUSUAL FIRE & EXPLOSION HAZARDS: Exposure to open flames and welding  
arcs can result in formation of HCl and traces of phosgene and chlorine.  
Forms explosive mixtures with oxygen under pressure. Remove sealed  
drums from vicinity of fire.

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M A T E R I A L S A F E T Y D A T A S H E E T #1001

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SECTION III - HEALTH HAZARD DATA

TLV: Methylene Chloride - 500ppm; methanol - 200ppm.

EFFECTS OF OVEREXPOSURE

INGESTION: Poison! May be fatal or cause blindness if swallowed.

EYE CONTACT: Painful and causes irritation. Methanol may effect the optic nerve on sensitive individuals leading to blurred vision and headaches.

INHALATION: Causes headaches and nausea at low concentrations. Dizziness begins at 1,000ppm which may cause death & 10,000ppm are immediately hazardous to life.

SKIN CONTACT: No irritation likely with short contact but prolonged contact will irritate and may burn.

---

SECTION IV - FIRST AID PROCEDURES

INGESTION: Do Not Induce Vomiting. Get medical attention immediately. Keep patient quiet and warm. Cover eyes to exclude light.

EYES: Flush with running water for 15 min. Get medical attention immediately.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration but never to an unconscious or convulsing patient. (See pg 4)

SKIN CONTACT: Wash with lots of running water and soap. Get medical attention. remove contaminated clothing as soon as possible and wash clothing before reuse.

---

SECTION V - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Contact with open flames or hot, glowing surfaces may produce toxic gases.

INCOMPATIBILITY: Oxygen under pressure, metal powders such as aluminum, magnesium or zinc. Strong oxidizers. Strong alkalies.

HAZARDOUS DECOMPOSITION PRODUCTS: May generate phosgene, hydrogen chloride or hydrogen.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None

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**M A T E R I A L   S A F E T Y   D A T A   S H E E T #1001**

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**SECTION VI - SPILL OR LEAK PROCEDURES**

**ACTION TO TAKE FOR SPILLS:** Keep from ground, sewer, or water supply.

**SMALL:** Wipe up or absorb onto sand. Transfer to closed container for disposal.

**LARGE:** Evacuate the area. Contain, transfer to closed containers.

**WASTE DISPOSAL METHOD:** Collect in closed containers and send to reclaimer. Observe all governmental regulations during disposal.

---

**SECTION VII - SPECIAL PROTECTION INFORMATION**

**VENTILATION:** Local exhaust and/or mechanical ventilation to limit concentration to less than the lowest TLV.

**RESPIRATORY PROTECTION:** NIOSH approved respirator in the absence of environmental control. For concentrations in the air to 2%, a cartridge respirator is acceptable; above 2% and emergencies, use NIOSH self-contained breathing apparatus.

**PROTECTIVE CLOTHING:** Body covered clothing including arm and head protection. Plastic gloves and apron.

**EYE PROTECTION:** Chemical goggles.

**OTHER PROTECTIVE EQUIPMENT:** Eyewash and safety shower available nearby.

---

**SECTION VIII - SPECIAL PRECAUTIONS**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:** Store in a cool place. Keep containers closed.

**OTHER PRECAUTIONS:** Vapors will collect in low places so do not enter these areas where vapors are suspected unless special self-contained breathing apparatus is worn and observer is present at all times.

**LABELLING INSTRUCTIONS:**



Danger! - POISON (Contains Methanol)  
May Be Fatal or Cause Blindness If Swallowed  
Cannot Be Made Non-Poisonous  
Harmful If Inhaled  
Can Cause Death If Too Much Breathed  
May Cause Irritation  
Use With Adequate Ventilation  
For Manufacturing Use Only

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McKesson EnviroSystems Company ("EnviroSystems") supplies this data sheet merely as a service to its customers. The information and recommendations contained herein have been compiled from sources and means believed to be reliable and to represent the best current opinion on the subject. However, customers should not assume that this data sheet sets forth all acceptable safety measures, or that other or additional measures would be appropriate under exceptional circumstances or conditions. Finally, inasmuch as the material is a recycled product, it may contain traces of compounds which may possess properties or exhibit effects not addressed herein. By reason of all of the foregoing, EnviroSystems makes no warranty or representation as to the accuracy or sufficiency of the statements contained in this data sheet, and neither EnviroSystems nor McKesson Corp. assumes any responsibility or liability in connection therewith.

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M A T E R I A L   S A F E T Y   D A T A   S H E E T

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#1001

AddendumSection 4 - First Aid Procedures

Inhalation: Get medical attention promptly.

Addendum---

The information presented herein is based upon a product composition as indicated in the Ingredients Section. The user should be aware that some components of this mixture are volatile and will evaporate if the container is left open. Under these circumstances the composition of this product may change which may result in a set of properties different than those presented herein. Refer to Section VIII for handling and storage precautions which may minimize component evaporation.

MK095947

MKIL192659

# MATERIAL SAFETY DATA SHEET

PG 1

METHYLENE CHLORIDE

REVISION OF: 02/14/86

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO 94109

## -----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC  
(800) 424-9300.

## -----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

## -----PRODUCT IDENTIFICATION-----

PRODUCT NAME: METHYLENE CHLORIDE  
COMMON NAMES/SYNONYMS: METHYLENE  
CHLORIDE; DICHLOROMETHANE

CAS NO.: 75-09-2  
MCKESSON CODE: T1229

FORMULA: C H2 CL2  
HAZARD RATING (NFPA 704)  
HEALTH: 2  
FIRE: 1  
REACTIVITY: 0  
SPECIAL: NONE

DATE ISSUED: 02/86  
SUPERCEDES: 11/85  
HAZARD RATING SCALE:  
0=MINIMAL 3=SERIOUS  
1=SLIGHT 4=SEVERE  
2=MODERATE

## -----HAZARDOUS INGREDIENTS-----

| COMPONENT          | %   | EXPOSURE LIMITS, PPM |           |             | HAZARD          |
|--------------------|-----|----------------------|-----------|-------------|-----------------|
|                    |     | OSHA PEL             | ACGIH TLV | OTHER LIMIT |                 |
| METHYLENE CHLORIDE | >99 | 500                  | 100       | NONE        | OSHA/ACGIH LIST |

## -----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 104 VAPOR PRESSURE, MM HG/20 DEG C: 340  
MELTING POINT, DEG F: N/A VAPOR DENSITY (AIR=1): 2.9  
SPECIFIC GRAVITY (WATER=1): 1.32 WATER SOLUBILITY, %: 1.6  
APPEARANCE AND ODOR: CLEAR, EVAPORATION RATE (BUTYL ACETATE=1): >1  
COLORLESS LIQUID; SWEETISH ODOR

## -----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT

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METHYLENE CHLORIDE

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BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: PROLONGED OR REPEATED EXPOSURE OR BREATHING VERY HIGH CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, AND VOMITING. IF PROLONGED EXCESSIVELY, BREATHING VAPORS MAY RESULT IN UNCONSCIOUSNESS, KIDNEY AND LUNG DAMAGE, OR EVEN DEATH.

EYE CONTACT: CAUSES PAIN AND MODERATE IRRITATION AND POSSIBLY REVERSIBLE CORNEAL INJURY.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. MAY BURN THE SKIN IF CONFINED TO THE SKIN.

SWALLOWED: CAUSES ABDOMINAL PAIN AND POSSIBLE ASPIRATION PNEUMONITIS IF VOMITED. METHYLENE CHLORIDE IS METABOLIZED IN THE BODY TO CARBON MONOXIDE WHICH REDUCES THE OXYGEN-CARRYING CAPACITY OF THE BLOOD.

CHRONIC EFFECTS OF EXPOSURE: ELEVATED CARBOXYHEMOGLOBIN LEVELS. IN A 2-YEAR INHALATION STUDY IN RATS, METHYLENE CHLORIDE HAS BEEN SHOWN TO PRODUCE A STATISTICALLY SIGNIFICANT INCREASE IN SALIVARY GLAND TUMORS AT A CONCENTRATION OF 3,500 PPM. THE TOXIC HAZARDS ARE INCREASED BY THE PRESENCE OF ALCOHOL, CARBON MONOXIDE, PERFORMING HEAVY LABOR, OR BY

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FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: 14.8 UPPER: 22.0

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE VAPORS DECOMPOSE TO HAZARDOUS PRODUCTS AT HIGH TEMPERATURES.

## -----HAZARDOUS REACTIVITY-----

STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: OPEN FLAMES, WELDING ARCS, OR OTHER HIGH TEMPERATURE SOURCES WHICH MAY INDUCE THERMAL DECOMPOSITION.

MATERIALS TO AVOID: ALKALIS, OXIDIZING MATERIALS, WATER, AND MOIST AIR. ALSO ALUMINUM AND ALKALI METALS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CHLORIDE, CHLORINE, OR PHOSGENE.

## -----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, CHEMICAL GOGGLES, AND RESPIRATORY PROTECTION. EXTINGUISH ALL IGNITION SOURCES. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER ABSORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS OR ABSORB WITH SORBENT MATERIAL AND PLACE THE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE

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MATERIAL SAFETY DATA SHEET

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METHYLENE CHLORIDE

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SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY PLACE. VENT CONTAINER FREQUENTLY. AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTY, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY  
DURING BUSINESS HOURS, PACIFIC TIME (415)983-9214

-----NOTICE-----

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE. THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

-----REVISION-----

02/86: REVISED FIRST AID MEASURES.

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END OF MSDS

\* \*\*\*\*\*

MK095990

MK11192693



# MATERIAL SAFETY DATA SHEET

## DIVISION ADDRESS

Mobay Chemical Corporation  
Organic & Rubber Chemicals Division  
Penn-Lincoln Parkway West  
Pittsburgh, PA 15205

ISSUE DATE 6-29-83  
SUPERSEDES

TRANSPORTATION EMERGENCY: CALL CHEMTREC  
TELEPHONE NO: 800-424-9300; DISTRICT OF COLUMBIA: 202-463-7616

MOBAY NON-TRANSPORTATION EMERGENCY NO.:  
(412) 923-1800

## I. PRODUCT IDENTIFICATION

PRODUCT NAME.....: 49-135, Germicide, ortho-Benzyl-  
para-chlorophenol  
PRODUCT CODE NUMBER.....: N-115  
CHEMICAL FAMILY.....: Phenol  
CHEMICAL NAME.....: 2-Benzyl-4-Chlorophenol  
SYNONYMS.....: Preventol BP Flakes, Technical  
CAS NUMBER.....: 120-32-1  
T.S.C.A. STATUS.....: On Inventory  
CHEMICAL FORMULA.....:  $C_{13}H_{11}ClO$

## II. HAZARDOUS INGREDIENTS

COMPONENTS: %: CURRENT TLV:

## III. PHYSICAL DATA

APPEARANCE.....: Solid (Flakes)  
COLOR.....: Colorless to Light Yellow  
ODOR.....: Slight  
MOLECULAR WEIGHT.....: 218.6  
MELT POINT.....: 111.2°F (44°C)  
BOILING POINT.....: 620.6°F (327°C)  
VAPOR PRESSURE.....: 0.1 mm Hg @ 100°C  
SPECIFIC GRAVITY.....: 1.22  
BULK DENSITY.....: 650 kg/m<sup>3</sup>  
SOLUBILITY IN WATER.....: 0.5 g/l @ 20°C

## IV. FIRE & EXPLOSION DATA

FLASH POINT °F(°C).....: 370.4°F (188°C) C.C.  
EXTINGUISHING MEDIA.....: All extinguishants allowed.  
SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS:  
Firefighters should wear full protective clothing including a self-contained breathing apparatus. During a fire, irritating and/or toxic gases and aerosols from the decomposition/combustion products may be present.

## V. HEALTH EFFECTS DATA

ANIMAL TOXICITY -  
ORAL, LD50  
(INGESTION).....: Greater than 5,000 mg/kg (rat)  
FISH, LC50.....: Approximately 1 mg/l (golden orfe)  
EYE EFFECTS.....: Corrosive, Strong Irritant (rabbit)  
SKIN EFFECTS.....: Strong Irritant (rabbit)

Product Code: N-115  
Page 1 of 3

JS 000051

## **HUMAN EFFECTS**

**OF OVEREXPOSURE.....:** Product is corrosive and irritating to eyes, skin and respiratory tract.

**THRESHOLD LIMIT VALUE.....:** Not Established

## **VI. EMERGENCY & FIRST AID PROCEDURES**

**EYE CONTACT.....:** Flush eyes with large amounts of water for at least 15 minutes. Contact a physician.

**SKIN CONTACT.....:** Wash skin with plenty of soap and water. Remove contaminated clothing and wash before reuse. Contact a physician immediately.

**INHALATION.....:** Remove to fresh air. If breathing is difficult give oxygen. Contact a physician.

## **VII. EMPLOYEE PROTECTION RECOMMENDATIONS**

**EYE PROTECTION.....:** Protective Goggles

**SKIN PROTECTION.....:** Rubber Gloves

**RESPIRATORY PROTECTION...:** Organic Vapor Respirator

**VENTILATION.....:** Local exhaust at work place.

## **VIII. REACTIVITY DATA**

**STABILITY.....:** Stable

**POLYMERIZATION.....:** Will Not Occur

### **HAZARDOUS DECOMPOSITION**

**PRODUCTS.....:** Product may emit hydrogen halogenide gases upon burning.

## **IX. SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Sweep up waste and place in an appropriately marked container. Utilize recommended protective clothing and equipment.

**WASTE DISPOSAL METHOD:** Waste material may be incinerated under conditions which meet federal, state and local environmental control regulations.

## **X. SPECIAL PRECAUTIONS & STORAGE DATA**

### **STORAGE TEMPERATURE**

**(MIN./MAX.).....:** Not Applicable/77°F (25°C)

**AVERAGE SHELF LIFE.....:** Six (6) Months

### **SPECIAL SENSITIVITY**

**(HEAT, LIGHT, MOISTURE):** Heat

### **PRECAUTIONS TO BE TAKEN**

**IN HANDLING AND STORING:** Store cool and dry away from food and drink. As with other dusty powders, all handling equipment should be properly grounded in order to prevent buildup of electrostatic charges.

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Product Code: N-115  
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XI. SHIPPING DATA

D.O.T. SHIPPING NAME.....: Corrosive Solid NOS  
TECHNICAL SHIPPING NAME...: 2-Benzyl-4-Chlorophenol  
D.O.T. HAZARD  
CLASSIFICATION.....: Corrosive Material  
UN/NA NO.....: UN 1759  
REPORTABLE QUANTITY.....: None  
D.O.T. LABELS REQUIRED...: Corrosive  
D.O.T. PLACARDS.....: Corrosive  
FRT. CLASS BULK.....: N.A.  
FRT. CLASS PKG.....: Chemicals, NOI, NMFC 60000  
PRODUCT LABEL.....: Dated 6-29-83  
  
REASON FOR ISSUE.....: New Product  
APPROVED BY.....: J. J. Gerulis  
TITLE.....: Regulatory Affairs Specialist  
DATE APPROVED.....: 6/9/83

# Mobay



Mobay  
Chemical Corporation

Organic and  
Rubber Chemicals Division

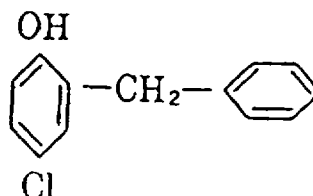
## Product Information

### PREVENTOL BP TECHNICAL FLAKES

Mobay Product Code N-115  
EPA Registration Number 39967-5

#### I. FORMULA

$C_{13}H_{11}OCl$



#### II. TYPICAL PROPERTIES

|                                |  |       |
|--------------------------------|--|-------|
| Physical Form                  | Flakes, colorless to light yellow<br>with slight phenolic odor |       |
| Composition                    | 2-Benzyl-4-Chlorophenol, purity of<br>at least 95%             |       |
| Density at 50°C                | 1.22 g/ml  |       |
| Bulk Density                   | 650 kg/m <sup>3</sup>  |       |
| Molecular Weight               | 218.7  |       |
| Melting Point                  | 44°C   |       |
| Boiling Point                  | 327°C  |       |
| Vapor Pressure                 | 0.1 mm Hg @ 100°C  |       |
| Flash Point                    | 188°C  |       |
| Invoicing Basis                | Net basis  |       |
| Solubility<br>(in g/l at 20°C) | 10% NaOH   | 1000  |
|                                | Ethanol  | >3000 |
|                                | Toluene  | 1000  |

JS 000054

Mobay Chemical Corporation • Organic and Rubber Chemicals Division • Pittsburgh, PA 15205 • (412) 777-2000

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#### Sales Offices:

4101 Westerly Place, Suite 101, Newport Beach, CA 92660  
6540 Powers Ferry Road, N.W. Suite 325, Atlanta, GA 30339  
9801 West Higgins Road, Suite 702, Rosemont, IL 60018  
3221 West Big Beaver Road, Suite 206, Troy, MI 48064  
Raritan Plaza III, Edison, NJ 08837  
3200 Gilchrist Road, P.O. Box 6252, Akron, OH 44312

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### III. PACKING AND SHIPPING

|                    |                      |
|--------------------|----------------------|
| Standard Packing:  | Fiber Drums          |
| Shipping Weight:   | 119 Lbs.             |
| DOT Shipping Name: | Corrosive Solids NOS |

### IV. STORAGE

The following storage precautions should be taken to prevent discoloration of Preventol B:

- Avoid storage time longer than six months
- Avoid storage temperatures above 77°F (25°C)
- Avoid prolonged exposure to light
- Avoid prolonged exposure to iron compounds

### V. FIELDS OF APPLICATION

*Germicide in disinfectant cleaner products used in hospitals, schools, homes and in public and private facilities where germ control is required or desirable.*

### VI. HEALTH AND SAFETY INFORMATION

APPROPRIATE LITERATURE HAS BEEN ASSEMBLED WHICH PROVIDES INFORMATION CONCERNING THE HEALTH AND SAFETY PRECAUTIONS THAT MUST BE OBSERVED WHEN HANDLING THIS PRODUCT. BEFORE WORKING WITH THIS PRODUCT YOU MUST READ AND BECOME FAMILIAR WITH THE AVAILABLE INFORMATION CONCERNING ITS HAZARDS, PROPER USE AND HANDLING. THIS CANNOT BE OVEREMPHASIZED. INFORMATION IS AVAILABLE IN SEVERAL FORMS, I.E., MATERIAL SAFETY DATA SHEETS AND PRODUCT LABELS. CONSULT YOUR MOBAY REPRESENTATIVE IF YOU HAVE NOT RECEIVED THIS LITERATURE.

MM:sdb2666

JS 000055

MKIL01957

MONSANTO PRODUCT NAME

NTA

MONSANTO COMPANY  
800 N. LINDBERGH BLVD.  
ST. LOUIS, MO. 63167  
EMERGENCY PHONE NO.  
(CALL COLLECT)  
314-694-1000

## PRODUCT IDENTIFICATION

SYNONYMS: Nitrilotriacetic acid, trisodium salt, monohydrate; Sodium nitrilotriacetate; NaNTA; Na<sub>3</sub>NTA; NTA

CHEMICAL FORMULA: N(CH<sub>2</sub>COONa)<sub>3</sub>•H<sub>2</sub>O

CAS NO.: 005064313

DOT PROPER SHIPPING NAME: Not applicable

DOT HAZARD CLASS/I.D. NO.: Not applicable

DOT LABEL: Not applicable

HAZARDOUS SUBSTANCE(S)/RQ(S): Not applicable

U.S. SURFACE FREIGHT CLASSIFICATION: Sodium Nitrilotriacetate  
(Water Softening Compound)

## WARNING STATEMENTS

WARNING!

CAUSES IRRITATION

Refer to PHYSIOLOGICAL EFFECTS SUMMARY on page 3.

## PRECAUTIONARY MEASURES

Avoid contact with eyes, skin, and clothing.  
Wash thoroughly after handling.

## EMERGENCY AND FIRST AID PROCEDURES

FIRST AID: IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Call a physician.

IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing. Wash clothing before reuse.

JS 000224

MATERIAL SAFETY DATA

N/A

## OCCUPATIONAL CONTROL PROCEDURES

EYE PROTECTION: Wear chemical safety goggles to prevent eye contact.

SKIN PROTECTION: Wear appropriate impervious gloves and protective clothing to prevent skin contact. Launder contaminated clothing and protective equipment before reuse.

RESPIRATORY PROTECTION: Use NIOSH approved equipment when airborne exposure is excessive. Consult respirator manufacturer to determine appropriate type equipment for given application.

VENTILATION: Provide ventilation to minimize exposure. Local exhaust ventilation preferred.

## AIRBORNE EXPOSURE LIMITS:

Product: NTA wt. % 100

OSHA PEL: None established

ACGIH/TLV: None established

Monsanto has adopted an internal standard of 1 mg/m<sup>3</sup> TWA (total dust) and 2 mg/m<sup>3</sup> STEL (total dust).

NTA has been shown under certain conditions to induce tumors in the urinary tracts of rats and mice (refer to PHYSIOLOGICAL EFFECTS SUMMARY).

Strict controls should be employed to limit occupational exposures to NTA.

## FIRE PROTECTION INFORMATION

NTA dust may be an explosion hazard.

IGNITION TEMPERATURE: 1,060°F for NTA dust cloud.

FLASH POINT: The decomposition point of NTA is 350°C.

FLAMMABLE LIMITS: The minimum explosive dust concentration is 2.00 ounces/cu. ft.

EXTINGUISHING MEDIA: Water, water spray or agents suitable for Class A fires.

SPECIAL FIREFIGHTING PROCEDURES: Firefighters should wear self-contained breathing apparatus when exposed to products of combustion or excessive airborne dust. Skin contact should be avoided by full protective clothing.

## REACTIVITY DATA

MATERIALS TO AVOID: None.

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO<sub>2</sub> and oxides of nitrogen can be formed as with any organic matter.

HAZARDOUS POLYMERIZATION: Does not occur.

JS 000225

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MATERIAL SAFETY DATA

## PHYSIOLOGICAL EFFECTS SUMMARY:

The following information represents the results of experiments conducted to assess the physiological properties of this material. This information was used by qualified experts to develop the Warning Statements and the recommended Occupational Control Procedures. Because dosages were intentionally chosen to induce toxic effects, evaluation of the significance of the data from individual studies may require professional knowledge of toxicology. Extensive evaluation of the available information indicates that NTA can be handled safely if the recommended procedures are followed.

Oral LD<sub>50</sub> (Rat): 2,595 mg/kg, Slightly Toxic  
Dermal LD<sub>50</sub> (Rabbit): >2,000 mg/kg, Slightly Toxic  
Eye Irritation (Rabbit): 34.0 on a scale of 110.0, Moderately Irritating  
Skin Irritation (Rabbit): 2.3 on a scale of 8.0, Slightly Irritating

Industrial experience has indicated that man is more sensitive to the irritant effects of NTA than are experimental animals.

Extensive subacute and chronic animal toxicity studies have been conducted with NTA acid and its trisodium salt. There is no experimental evidence that NTA is mutagenic or teratogenic. Lifetime feeding studies at high levels of NTA acid (15,000 ppm to rats and mice) and its trisodium salt (20,000 ppm to rats) produced significant increases in tumors of the urinary tract. At lower levels of NTA acid (7,500 ppm to rats and mice) or the trisodium salt (2,000 ppm in rats and 5,000 ppm in mice), the incidence of urinary tract tumors was not significantly increased; there was an increased incidence of hydronephrosis and/or nephritis in the rats at these dosages. No evidence of chronic toxic lesions of the urinary tract or any other site were observed when the trisodium salt was fed to rats at 200 ppm or mice at 2,500 ppm. The National Cancer Institute's report of the "Bioassay of NTA acid and its trisodium salt" noted that "lesions of the urinary tract which arise as a result of administration of the compounds may be due to a local effect which can be brought about only by high concentrations. The occurrence of treatment-related neoplasms at high doses among animals of this bioassay should be taken into account in evaluations of hazards posed by use of the compounds." According to the Guidelines for Classification of Experimental Animal Carcinogens of the American Conference of Governmental Industrial Hygienists, NTA would not "be considered an occupational carcinogen of any practical significance."

## PHYSICAL DATA

Appearance and Odor: White crystalline powder; typical aminoacetate odor  
True Density (g/cc): 1.782  
Apparent Bulk Density (g/cc): 0.68  
Solubility in H<sub>2</sub>O: 48.4% @ 25°C  
pH (1% Solution @ 25°C): 10.6 - 11.0  
Vapor Pressure @ 40°C (mm Hg): 15

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

MATERIAL SAFETY DATA

NTA

JS 000226

MKIL02037

## SPILL, LEAK &amp; DISPOSAL INFORMATION

WASTE DISPOSAL: Dispose of in a landfill in accordance with all local, state and federal regulations.

SPILL OR LEAKAGE PROCEDURES: Sweep up and place bulk material in container and remove to a landfill. Flush small spills to sewer with plenty of water. Flush spill area with water.

When discarded or spilled, this product is not a hazardous waste as defined in current federal regulations 40 CFR, Part 261 (RCRA).

This product is not a hazardous substance as defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund) or as defined in the current federal regulations 40 CFR, Part 116 (Section 311, Clean Water Act).

This product, when spilled, is not a toxic pollutant as currently defined by the Federal EPA per Section 307 of the Clean Water Act.

## ADDITIONAL COMMENTS

This is not a hazardous material as defined in 29 CFR, Section 1915.2.

Extensive environmental studies demonstrating the safety of NTA have been completed. NTA biodegrades rapidly in municipal waste treatment facilities (removal 70-90%). After discharge, it is diluted and continues to biodegrade and/or photodegrade leaving an average equilibrium concentration of 0.004 mg/l (range 0.0002-0.034 mg/l). Because of its rapid disappearance in the environment, NTA will not solubilize or transport heavy metals. No effects to aquatic organisms are expected because the toxicity is low (96 hr LC<sub>50</sub> 100-10,000 ppm; chronic no observed effect level 19-3,000 ppm). Neither NTA nor its biodegradation products contribute to eutrophication. A thorough summary of literature can be found in the Great Lakes Science Advisory Board Publication entitled "Ecological Effects of Non-Phosphate Detergent Builders: Final Report on NTA", December, 1978 (IJC Great Lakes Regional Office, 100 Ouellette Avenue, Windsor, Ontario N9A 6T3).

DATE 7/82

REVISED

X

SUPERSEDES

JS 000227

MSDS NUMBER 005064313

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT: Dolores M. Wente  
Product Acceptability Coordinator  
Monsanto Industrial Chemicals Co.  
Detergents and Phosphates Division  
314-694-2096  
(A Unit of Monsanto Company)

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Occidental Chemical Corporation  
Industrial & Specialty Chemicals Division

MSDS 529A

## MATERIAL SAFETY DATA SHEET

### Product Information

**Product Name**

THIONYL CHLORIDE

**CAS Registry Number**

7719-09-7

**Common Name or Synonym**

Sulfur oxychloride  
Sulfurous oxychloride

**Chemical Family**

Inorganic sulfur compound

**Chemical Name**

Thionyl chloride

**Chemical Formula**

$\text{SOCl}_2$

### Health Data

**WARNING!** POISON! INHALATION HAZARD!  
ACID CORROSIVE! CONTACT WITH THE EYES MAY CAUSE PERMANENT DAMAGE.

**First Aid Measures**

**Eye Contact:** Immediately flush eyes with a directed stream of water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of all eye and lid tissue. GET IMMEDIATE MEDICAL ATTENTION. Contact lenses should not be worn when working with this chemical.

**Skin Contact:** Immediately flush contaminated skin with water and wash with soap and water. If large areas of the body are contaminated, remove clothing and immediately use safety shower. Flush exposed area with large amounts of water for at least 15 minutes. GET PROMPT MEDICAL ATTENTION IF IRRITATION OCCURS. Discard contaminated clothing and shoes.

**Ingestion:** If person is conscious immediately administer large quantities of water. DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION.

**Inhalation:** Move the exposed person to fresh air at once. If breathing has stopped perform artificial respiration. Keep the affected person warm and at rest. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

**Effects of Overexposure:** Thionyl chloride is severely irritating and corrosive to the eyes, skin and respiratory tract. Repeated exposure to vapor may cause chronic respiratory irritation. Significant overexposure to vapors can cause delayed pulmonary edema. Direct contact with the liquid may cause severe damage to the skin and eyes.

In the presence of moisture thionyl chloride decomposes into hydrogen chloride and sulfur dioxide which substances are toxic and constitute serious toxicity hazards.

**Toxicity:** Lethal dose by inhalation in cats is reported as 17.5 ppm for 20 minutes.

JS 031358

Emergency Telephone Number Available 24 Hrs./Day 1-716/278-7021

MKIL05230

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**MATERIAL SAFETY DATA SHEET**

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**Fire and Explosion Hazard Data**

**Flash Point:** Not Flammable

**Special Fire Fighting Procedure & Personal Protection:** Use self-contained breathing apparatus and full protective equipment. Water may be used to cool drums or tanks, but prevent water from contacting contents.

**Extinguishing Media:** Use dry chemicals or CO<sub>2</sub>.

**Unusual Fire and Explosion Hazards:** Under fire conditions, will liberate toxic gases including sulfur dioxide, chlorine and/or hydrogen chloride gases.

---

**Special Protection**

**Ventilation:** Provide good general room ventilation to minimize exposure. Use local exhaust ventilation at points of vapor emission.

**Respiratory:** Use NIOSH/MSHA approved acid-gas vapor respirator for areas where airborne exposure is excessive.

**Gloves:** Wear protective gloves, such as rubber or neoprene, to minimize skin contact. Wash thoroughly after handling.

**Eye Protection:** Wear safety glasses with side shields or chemical goggles, plus face shield where appropriate.

**Other Protective Equipment:** Eye wash facility should be in close proximity. Use of impervious coveralls and rubber shoes are suggested. An emergency shower should be available.

---

**Physical Data**

**Boiling Point**  
77°C

**Solubility In Water**  
Decomposes

**Appearance and Color**  
Clear, colorless to pale yellow liquid with a very pungent odor.

**Specific Gravity (H<sub>2</sub>O=1)**  
1.63 (13.6 lbs/gal)

**Vapor Density (Air=1)**  
4.1

**Melting Point**  
-104.5°C

**Vapor Pressure (mm Hg @ 20°C)**  
92

JS 031359

# Thionyl Chloride

MSDS 529A

## MATERIAL SAFETY DATA SHEET

### Ingredients

|                  | Percent | Threshold Limit Values*                       |
|------------------|---------|---|
| Thionyl chloride | 99      | A TLV® of 1 ppm or 5 mg/m³ has been proposed. |

\*ACGIH 1984-85 Edition; Notice of Intended Change

### Hazardous Reactivity

**Incompatibility:** Reacts violently with strong alkalis, water and reducing compounds. Can react with many oxygen-containing organic compounds.

**Hazardous Decomposition Products:** The reaction of thionyl chloride with incompatible materials can release hydrogen chloride, sulfur dioxide and chlorine gases.

**Conditions To Avoid:** Avoid heat, exposure to moisture, contact with strong alkalis or organic matter. Keep lights, flames or sparks away from drum or tank opening since flammable hydrogen gas may be formed upon reaction of  $\text{SOCl}_2$  with steel in the presence of moisture.

### Handling and Storage

**Precautions:** Store drums in cool, dry, well-ventilated area out of the sun and away from fire hazard. Storage tanks must be sealed to protect

against entry of atmospheric moisture. Storage tanks should be diked to hold 110% of tank volume.

### Environmental Protection

**Procedure In Case Of Spill Or Release:** Obtain full protective equipment and self-contained breathing apparatus. Contain release or spill by dike to prevent flow to sewers or streams. Pump into marked containers for reclamation or disposal. Soak up small spills with absorbent material. Scoop and sweep up the spilled product and place in marked disposal containers. If possible, clean up spill area on a dry basis and then flush with plenty of water.

**Waste Disposal Method:** Drown by feeding slowly into large volume of water in retention area, adjust pH with caustic before disposal; or, incinerate in equipment designed to handle hydrogen chloride and sulfur dioxide as combustion products.

### Regulatory Status

The shipment of Thionyl chloride is regulated by the U.S. Department of Transportation. It is classified as a Corrosive Material, requires Corro-

sive and Poison DOT labels and is assigned UN 1836 as an international identification number (49 CFR §172.101).

JS 031360

**MATERIAL SAFETY DATA SHEET****Regulatory Status Continued**

OSHA Standard 29 CFR §1910.1200 Hazard Communication requires that information be provided to employees concerning hazardous chemicals by means of a hazard communication program including container labels, Material Safety Data Sheet literature, training and access to written records.

Information contained in this section is provided as a service and while based on generally available resources and information should not be considered to be an all-inclusive regulatory bibliography of the product, particularly regarding non-federal laws and regulations. Users are advised to check with state and local authorities concerning any applicable regulations regarding transportation, handling, use or disposal of this product.

**Additional Information**

See OCC Product Data Sheet 718 for product specifications, packaging and other information.

Hazard ratings for Thionyl chloride according to the Hazardous Materials Identifications System (HMIS) developed by the National Paint and Coatings Association are:

|                |                         |
|----------------|-------------------------|
| Health, 3      | Flammability, 0;        |
| Reactivity, 2; | Personal Protection, G. |

Thionyl chloride is listed in the TSCA Chemical Substance Inventory under CAS No. 7719-09-7.

For additional non-emergency information, contact Technical Service, Occidental Chemical Corporation, Industrial & Specialty Chemicals Division, 716/286-3000.

**Occidental Chemical Corporation**  
**Industrial & Specialty Chemicals Division**

Occidental Chemical Center, 360 Rainbow Boulevard South  
Box 728, Niagara Falls, New York 14302 716/286-3000

☐ New ☒ Revised Date April, 1986

IMPORTANT! The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. No warranty or guaranty, express or implied, is made regarding performance, stability or otherwise. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage. Other factors may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal State or local laws.

JS 031361

# U.S. DEPARTMENT OF LABOR

WAGE AND LABOR STANDARDS ADMINISTRATION  
Bureau of Labor Standards

Form No. 1516-01/1-4  
May 1969

## MATERIAL SAFETY DATA SHEET

| SECTION I  |   |
|--|---|
| MANUFACTURER'S NAME<br>PPG Industries, Inc.  | EMERGENCY TELEPHONE NO.<br>(318) 882-1200   |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>No. 1 Gateway Center, Pittsburgh, Pa. 15222 |   |
| CHEMICAL NAME AND SYNONYMS<br>1,1,1-trichloroethane, methylchloroform                              | TRADE NAME AND SYNONYMS<br>TRI-ETHANE       |
| CHEMICAL FAMILY<br>Chlorinated Hydrocarbons  | FORMULA<br>CH <sub>3</sub> CCl <sub>3</sub> |

| SECTION II HAZARDOUS INGREDIENTS                      |     |                |   |   |                |
|---|-----|----------------|---|---|----------------|
| PAINTS, PRESERVATIVES, & SOLVENTS                     | %   | TLV<br>(Units) | ALLOYS AND METALLIC COATINGS              | % | TLV<br>(Units) |
| PIGMENTS  |     |                | BASE METAL                                |   |                |
| CATALYST  |     |                | ALLOYS                                    |   |                |
| VEHICLE   |     |                | METALLIC COATINGS                         |   |                |
| SOLVENTS  | 100 | 350            | FILLER METAL<br>PLUS COATING OR CORE FLUX |   |                |
| ADDITIVES   |     |                | OTHERS                                    |   |                |
| OTHERS  |     |                |   |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |     |                |   | % | TLV<br>(Units) |
|   |     |                |   |   |                |
|   |     |                |   |   |                |
|   |     |                |   |   |                |
|   |     |                |   |   |                |

| SECTION III PHYSICAL DATA                               |            |   |      |
|---|------------|---|------|
| BOILING POINT (P.F.)                                    | 165.4      | SPECIFIC GRAVITY (M <sub>2</sub> O = 1) | 1.31 |
| VAPOR PRESSURE (mm Hg.)                                 | 120        | PERCENT VOLATILE<br>BY VOLUME (%)       | 100  |
| VAPOR DENSITY (AIR = 1)                                 | 4.54       | EVAPORATION RATE<br>(ether = 1)         | 0.35 |
| SOLUBILITY IN WATER                                     | Negligible |   |      |
| APPEARANCE AND ODOR Colorless appearance, ethereal odor |            |   |      |

| SECTION IV FIRE AND EXPLOSION HAZARD DATA   |                            |                  |           |
|---|----------------------------|------------------|-----------|
| FLASH POINT (Method used)   | None (Tag, open or closed) | FLAMMABLE LIMITS | LeI (Uel) |
| EXTINGUISHING MEDIA   |                            |                  |           |
| SPECIAL FIRE FIGHTING PROCEDURES  |                            |                  |           |
| UNUSUAL FIRE AND EXPLOSION HAZARDS  |                            |                  |           |
| Vapors can be ignited only by high intensity source<br>of ignition. Combustion forms HCl and possible traces of phosgene. |                            |                  |           |

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| SECTION V. HEALTH HAZARD DATA      |   |
|------------------------------------|---|
| THRESHOLD LIMIT VALUE              | 350 ppm   |
| EFFECTS OF OVEREXPOSURE            | Loss of co-ordination and equilibrium to actual unconsciousness, and even death, in unventilated areas (such as tanks).   |
| EMERGENCY AND FIRST AID PROCEDURES | Move to fresh air, use artificial respiration if breathing has stopped. Administer oxygen after breathing has been restored. (Never administer adrenalin!) Call physician (he should not administer adrenalin). |

| SECTION VI. REACTIVITY DATA  |                |   |                     |
|--|----------------|---|---------------------|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID |
|  | STABLE         | X |                     |
| INCOMPATIBILITY (Materials to avoid)<br>Avoid mixing with caustic soda and caustic potash. |                |   |                     |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>HCl and possible traces of phosgene.                   |                |   |                     |
| HAZARDOUS POLYMERIZATION   | MAY OCCUR      |   | CONDITIONS TO AVOID |
|  | WILL NOT OCCUR | X |                     |

| SECTION VII. SPILL OR LEAK PROCEDURES  |  |
|--|--|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED<br>Adequate ventilation must be provided. Workmen should be provided with fresh air mask or sent to fresh air. |  |
| WASTE DISPOSAL METHOD<br>Forced ventilation or evaporation.  |  |

| SECTION VIII. SPECIAL PROTECTION INFORMATION          |                      |                                      |         |
|---|----------------------|--------------------------------------|---------|
| RESPIRATORY PROTECTION (Specify type) Fresh air masks |                      |                                      |         |
| VENTILATION   | LOCAL EXHAUST        | Sufficient to maintain TLV           | SPECIAL |
|   | MECHANICAL (General) |                                      | OTHER   |
| PROTECTIVE GLOVES<br>Neoprene or Viton                |                      | EYE PROTECTION<br>Glasses or goggles |         |
| OTHER PROTECTIVE EQUIPMENT<br>Neoprene apron          |                      |                                      |         |

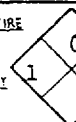
| SECTION IX. SPECIAL PRECAUTIONS                 |  |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING |  |
| OTHER PRECAUTIONS                               |  |

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**ROHM AND HAAS COMPANY**CORPORATE PRODUCT INTEGRITY DEPARTMENT  
INDEPENDENCE MALL WEST  
PHILADELPHIA, PA 19105EMERGENCY TELEPHONE  
215-592-3000 (ROHM AND HAAS)  
800-424-9300 (CHEMTREC)**HAZARD RATING**4=EXTREME  
3=HIGH  
2=MODERATE  
1=SLIGHT  
0=INSIGNIFICANT  
\*\*SEE SECTION IV

FIRE



REACTIVITY

SPECIAL

**MATERIAL SAFETY DATA SHEET**

NOT OSHA HAZARDOUS

LIST 7

|  |  |                 |                  |
|--|--|-----------------|------------------|
| MATERIAL<br>ACRYSOL® LMW-45 Polymer Solution | CODE<br>64839  | KEY<br>895275-1 | DOT HAZARD CLASS |
|  | DATE ISSUED<br>05/17/85  |                 |                  |
| FORMULA                                      | CHEMICAL NAME OR SYNONYMS<br>Aqueous polyacrylic acid solution |                 |                  |

**I - COMPOSITIONAL INFORMATION**

|                  | CAS Reg. No. | APPROX WT % | TWA/TLV        |
|------------------|--------------|-------------|----------------|
| Polyacrylic Acid | NOT REQ'D    | 47-49       | R&H OSHA ACGIH |
| Water            | NONHAZ       | 51-53       | NE NE NE       |

**II - PHYSICAL PROPERTY INFORMATION**

|   |   |                                       |  |
|---|---|---------------------------------------|--|
| APPEARANCE - ODOR - pH.<br>Clear to slightly hazy liquid; mild odor; pH 3-5 |   | VISCOSITY<br>500-1200 cps             |  |
| MELTING OR FREEZING POINT<br>0C /32F (water)                                | BOILING POINT<br>100C /212F (water)           | VAPOR PRESSURE (mm Hg)<br>17 (water)  | VAPOR DENSITY (AIR=1)<br>0.62 (water)            |
| SOLUBILITY IN WATER<br>Dilutable  | PERCENT VOLATILE (BY WEIGHT)<br>51-53 (water) | SPECIFIC GRAVITY (WATER=1)<br>1.0-1.2 | EVAPORATION RATE (BUTYL ACETATE=1)<br><1 (water) |

**III - FIRE AND EXPLOSION HAZARD INFORMATION**

|   |                                 |                                 |                                 |
|---|---------------------------------|---------------------------------|---------------------------------|
| FLASH POINT<br>Non-combustible  | AUTO IGNITION TEMPERATURE<br>NA | LOWER EXPLOSION LIMIT (%)<br>NA | UPPER EXPLOSION LIMIT (%)<br>NA |
| EXTINGUISHING MEDIA<br><input type="checkbox"/> FOAM <input type="checkbox"/> "ALCOHOL" FOAM <input type="checkbox"/> CO <sub>2</sub> <input type="checkbox"/> DRY CHEMICAL <input type="checkbox"/> WATER SPRAY <input type="checkbox"/> OTHER |                                 |                                 |                                 |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Wear MSHA/NIOSH-approved, pressure-demand, self-contained breathing apparatus or equivalent.  |                                 |                                 |                                 |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>Product will not burn. It may spatter if temperature exceeds boiling point (100C/212F).<br>Dried polymer films are capable of burning.  |                                 |                                 |                                 |

**IV - HEALTH HAZARD INFORMATION**

|   |  |
|---|--|
| ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS  |  |
| EFFECTS OF OVEREXPOSURE<br>Eye Contact: Substance can cause eye irritation.   |  |
| EMERGENCY AND FIRST AID PROCEDURES<br>Inhalation: Move subject to fresh air.<br><br>Eye and Skin Contact: Flush eyes with large amounts of water for at least 15 minutes.<br>Consult a physician if irritation persists. Wash affected skin areas with soap and water.<br><br>Ingestion: Dilute by giving two glasses of water to drink. Call a physician. Never give anything by mouth to an unconscious person. |  |

JS 030658

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### V - REACTIVITY INFORMATION

|   |  |                           |
|---|--|---------------------------|
| STABILITY<br><input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE                         |  | CONDITIONS TO AVOID<br>NA |
| HAZARDOUS DECOMPOSITION PRODUCTS  |  |                           |
| HAZARDOUS POLYMERIZATION<br><input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR |  | CONDITIONS TO AVOID<br>NA |
| INCOMPATIBILITY MATERIALS TO AVOID:<br><input type="checkbox"/> WATER <input type="checkbox"/> OTHER              |  |                           |

### VI - SPILL OR LEAK PROCEDURE INFORMATION

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Floors may be slippery -- use care to avoid falls. Wear eye protection and impervious clothing.

Dike and contain spill with inert material (sand, earth, etc.) Transfer liquid and solid to separate containers for recovery or disposal. Keep spill out of municipal sewers and open bodies of water.

WASTE DISPOSAL METHODS

Product can be landfilled if sufficient absorbent is added to make it solid. Landfill contaminated diking material according to current local, state and federal regulations.

### VII - SPECIAL PROTECTION INFORMATION

|  |  |
|--|--|
| VENTILATION TYPE<br>Normal room ventilation.                   |  |
| RESPIRATORY PROTECTION<br>None required for normal operations. |  |
| PROTECTIVE GLOVES<br>Impervious                                | EYE PROTECTION<br>Splashproof goggles (ANSI Z87.1 or equivalent) |
| OTHER PROTECTIVE EQUIPMENT<br>Eyewash facility, safety shower  |  |

### VIII - STORAGE AND HANDLING INFORMATION

| STORAGE TEMPERATURE |      | INDOOR | HEATED | REFRIGERATED | OUTDOOR |
|---------------------|------|--------|--------|--------------|---------|
| MAX.                | MIN. | YES    | NO     | NO           | YES     |

### IX - TOXICITY INFORMATION

Range-finding data for similar material:

Acute oral LD50 (rat): >5 g/kg

Acute dermal LD50 (rabbit): >5 g/kg

Eye irritation (rabbit): Inconsequential

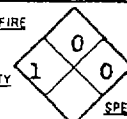
Skin irritation (rabbit): Non-irritating; Primary Irritation Index: 0/8.0.

### X - MISCELLANEOUS INFORMATION

|  |                 |   |                        |
|--|-----------------|---|------------------------|
| NE=None Established  |                 |   |                        |
| JS 030659  |                 |   |                        |
| ACRY SOL® IS A TRADEMARK OF ROHM AND HAAS COMPANY OR ONE OF ITS SUBSIDIARIES OR AFFILIATES.  |                 |   |                        |
| NA = NOT APPLICABLE<br>C = CEILING VALUE   | KEY<br>895275-1 | DATE OF ISSUE<br>05/17/85   | SUPERSEDES<br>07/15/82 |
| THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. |                 | ROHM AND HAAS COMPANY ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE TO VENDEES, USERS OR THIRD PARTIES CAUSED BY THE MATERIAL. SUCH VENDEES OR USERS ASSUME ALL RISKS ASSOCIATED WITH THE USE OF THE MATERIAL. |                        |

**ROHM AND HAAS COMPANY**CORPORATE PRODUCT INTEGRITY DEPARTMENT  
INDEPENDENCE MALL WEST  
PHILADELPHIA, PA 19105EMERGENCY TELEPHONE  
215-592-3000 (ROHM AND HAAS)  
800-424-9300 (CHEMTREC)**HAZARD RATING**4=EXTREME  
3=HIGH  
2=MODERATE  
1=SLIGHT  
0=INSIGNIFICANT  
\*SEE SECTION IV

FIRE



REACTIVITY

SPECIAL

KF211  
LIST 8**MATERIAL SAFETY DATA SHEET**

NOT OSHA HAZARDOUS

|   |   |                 |                                  |
|---|---|-----------------|----------------------------------|
| MATERIAL<br>TAMOL® 731 25% Dispersing agent | CODE<br>61588   | KEY<br>904158-3 | DOT HAZARD CLASS<br>NONREGULATED |
| FORMULA<br>Not applicable                   | CHEMICAL NAME OR SYNONYMS<br>Sodium salt of polymeric carboxylic acid |                 |                                  |

**I - COMPOSITIONAL INFORMATION**

|  | CAS REG. NO. | APPROX WT % | TWA/TLV                    |
|--|--------------|-------------|----------------------------|
| Sodium salt of polymeric carboxylic acid | NONHAZ       | 24-26       | R&H OSHA ACGIH<br>NE NE NE |
| Residual monomer (See Section X)         | NOTREQ       | 0.1 max.    | NR NR NR                   |
| Formaldehyde (See Section X)             | NOTREQ       | 0.05 max.   | 0.5 3 1C ppm               |
| Water                                    | NONHAZ       | 74-76       | NE NE NE                   |

**II - PHYSICAL PROPERTY INFORMATION**

|  |  |                                    |   |
|--|--|------------------------------------|---|
| APPEARANCE - ODOR - pH.<br>Clear to slightly hazy liquid; mild inoffensive odor; pH 9.0-10.5 | VISCOSITY<br>140 cps (Brookfield) max. |                                    |   |
| MELTING OR FREEZING POINT<br>-2C/28F   | BOILING POINT<br>100C/212F             | VAPOR PRESSURE (mm Hg)<br>17 mm Hg | VAPOR DENSITY (AIR=1)<br>Less than 1              |
| SOLUBILITY IN WATER<br>Completely  | PERCENT VOLATILE (BY WEIGHT)<br>74-76  | SPECIFIC GRAVITY (WATER=1)<br>1.10 | EVAPORATION RATE (BUTYL ACETATE=1)<br>Less than 1 |

**III - FIRE AND EXPLOSION HAZARD INFORMATION**

|  |                                 |                                 |                                 |
|--|---------------------------------|---------------------------------|---------------------------------|
| FLASH POINT<br>Non-combustible   | AUTO IGNITION TEMPERATURE<br>NA | LOWER EXPLOSION LIMIT (%)<br>NA | UPPER EXPLOSION LIMIT (%)<br>NA |
| EXTINGUISHING MEDIA<br><input type="checkbox"/> FOAM <input type="checkbox"/> "ALCOHOL" FOAM <input type="checkbox"/> CO <sub>2</sub> <input type="checkbox"/> DRY CHEMICAL <input type="checkbox"/> WATER SPRAY <input checked="" type="checkbox"/> OTHER |                                 |                                 |                                 |

**SPECIAL FIRE FIGHTING PROCEDURES**

Wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent).

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

Material can splatter above 100C/212F. Polymer film can burn.

**IV - HEALTH HAZARD INFORMATION**ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS  
TWA--See SECTION I. STEL = 1 ppm formaldehyde**EFFECTS OF OVEREXPOSURE**Inhalation: Vapor or mist can cause headache, nausea, and irritation to the nose and throat.Eye Contact: Slightly irritating to eyes.Skin Contact: Irritating to skin upon repeated or prolonged contact.**EMERGENCY AND FIRST AID PROCEDURES**Inhalation: Move subject to fresh air.Eye and Skin Contact: IMMEDIATELY flush eyes with a large amount of water and continue for 15 minutes. See a physician. Wash skin thoroughly with soap and water.

JS 030666

MKIL05058

### V - REACTIVITY INFORMATION

|   |  |   |  |
|---|--|---|--|
| STABILITY<br><input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE                         |  | CONDITIONS TO AVOID<br>Temperatures over 177C/350F. |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>Thermal decomposition: oxides of carbon                                       |  |   |  |
| HAZARDOUS POLYMERIZATION<br><input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR |  | CONDITIONS TO AVOID<br>NA                           |  |
| INCOMPATIBILITY (MATERIALS TO AVOID)<br><input type="checkbox"/> WATER <input type="checkbox"/> OTHER NA          |  |   |  |

### VI - SPILL OR LEAK PROCEDURE INFORMATION

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  
Keep spectators away. Dike and contain spill with inert material (sand, earth, etc.). Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for disposal. Keep spill out of sewers and open bodies of water. Floors may be slippery; use care to avoid falling.

WASTE DISPOSAL METHODS  
Landfill or incinerate contaminated diking material according to current local, state and federal regulations.

### VII - SPECIAL PROTECTION INFORMATION

|   |  |
|---|--|
| VENTILATION TYPE<br>Mechanical local exhaust ventilation at point of contaminant release.   |  |
| RESPIRATORY PROTECTION<br>None required if good ventilation is maintained. Otherwise, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent). |  |
| PROTECTIVE GLOVES<br>Impervious   | EYE PROTECTION<br>Chemical splash goggles (ANSI Z-87.1 or approved equivalent) |
| OTHER PROTECTIVE EQUIPMENT  |  |

### VIII - STORAGE AND HANDLING INFORMATION

|  |        |        |              |         |
|--|--------|--------|--------------|---------|
| STORAGE TEMPERATURE<br>MAX. 60C/140F MIN. 0C/32F                   | INDOOR | HEATED | REFRIGERATED | OUTDOOR |
| PRECAUTIONARY LABELING: KEEP FROM FREEZING--PRODUCT MAY COAGULATE. |        |        |              |         |

### IX - TOXICITY INFORMATION

The effects of overexposure shown in Section IV are based on acute toxicity profiles of substances similar to this product. Typical values are: Rat, oral LD50 >5.0 g/kg; Rabbit, dermal LD50: >5.0 g/kg; Rabbit, skin irritation: practically nonirritating--72 Mean Irritation score= 0 to 2; Rabbit, eye irritation: inconsequentially irritating.

### X - MISCELLANEOUS INFORMATION

NOTE: Formaldehyde is an animal carcinogen; however, objective data indicate that under typical conditions of use for this product, the R&H TWA of 0.5 ppm will not be exceeded.

NOTE: Monomer vapors can be evolved when product is heated during processing operations. In such a case, use local exhaust ventilation with a minimum capture velocity of 100ft/min. (30m/min.) at the point of monomer evolution. Refer to Industrial Ventilation: A Manual of Recommended Practice published by the Am. Conf. of Govt. Ind. Hygienists.

FOOTNOTE TO SECTION I: NE=None established; NOTREQ or NR=not required.

**TAMOL® IS A TRADEMARK OF ROHM AND HAAS COMPANY OR ONE OF ITS SUBSIDIARIES OR AFFILIATES.**

|  |                 |   |                        |
|--|-----------------|---|------------------------|
| NA = NOT APPLICABLE<br>C = CEILING VALUE   | KEY<br>904158-3 | DATE OF ISSUE<br>03/19/86   | SUPERSEDES<br>06/09/81 |
| THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. |                 | ROHM AND HAAS COMPANY ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE TO VENDEES, USERS OR THIRD PARTIES CAUSED BY THE MATERIAL. SUCH VENDEES OR USERS ASSUME ALL RISKS ASSOCIATED WITH THE USE OF THE MATERIAL. |                        |

JS 030667

# ROHM AND HAAS COMPANY

CORPORATE PRODUCT INTEGRITY DEPARTMENT  
INDEPENDENCE MALL WEST  
PHILADELPHIA, PA 19105

EMERGENCY TELEPHONE  
215-597-3000 (ROHM  
AND HAAS)  
800-424-9300 (CHEMTREC)



HAZARD RATING FIRE  
1-EXTREME TOXIC  
2-MODERATE CITY  
3-SLIGHT  
4-INSIGNIFICANT  
5-SEE SECTION IV  
REACTIVITY  
1-0  
2-0  
3-0  
4-0  
5-0  
SPECIAL

## LIST 8 MATERIAL SAFETY DATA SHEET NOT OSHA HAZARDOUS

|   |   |                 |                                  |
|---|---|-----------------|----------------------------------|
| MATERIAL<br>TAMEL SG-1 Dispensing Agent | CODE<br>60273   | KEY<br>903708-0 | DOT HAZARD CLASS<br>NONREGULATED |
| DATE ISSUED<br>08/12/85                 |   |                 |                                  |
| FORMULA<br>Not applicable               | CHEMICAL NAME OR SYNONYMS<br>Aqueous solution polymer |                 |                                  |

### I - COMPOSITIONAL INFORMATION

|                 | CAS REG. NO. | APPROX WT % | TWA/TLV      |
|-----------------|--------------|-------------|--------------|
| Acrylic polymer | NONHAZ       | 34-36       | NE NE NE     |
| Ammonia         | NOT REQ      | 0.2         | 25 50 25 ppm |
| Water           | NONHAZ       | 64-66       | NE NE NE     |

### II - PHYSICAL PROPERTY INFORMATION

|   |  |
|---|--|
| APPEARANCE-COLOR-PH<br>Clear liquid; mild ammoniacal odor; pH 8.0-9.0 | VISCOSITY<br>400 cps max.                        |
| MELTING OR FREEZING POINT<br>100C/212F water                          | VAPOR PRESSURE(MM HG)<br>17 mm Hg 320C/60F       |
| SOLUBILITY IN WATER<br>Dilutable                                      | VAPOR DENSITY (AIR=1)<br>Less than 1             |
| PERCENT VOLATILE BY WEIGHT<br>64-66 water                             | EVAPORATION RATE(BUTYL ACETATE=1)<br>Less than 1 |

### III - FIRE AND EXPLOSION HAZARD INFORMATION

|  |                                 |                                 |                                 |
|--|---------------------------------|---------------------------------|---------------------------------|
| FLASH POINT<br>Non-combustible   | AUTO IGNITION TEMPERATURE<br>NA | LOWER EXPLOSION LIMIT(L%)<br>NA | UPPER EXPLOSION LIMIT(U%)<br>NA |
| EXTINGUISHING MEDIA<br>FOAM ALCOHOL CO <sub>2</sub> DRY CHEMICAL WATER SPRAY OTHER |                                 |                                 |                                 |
| SPECIAL FIRE FIGHTING PROCEDURES<br>NA   |                                 |                                 |                                 |

UNUSUAL FIRE AND EXPLOSION HAZARDS  
Material can splatter above 100C/212F. Polymer film can burn.

### IV - HEALTH HAZARD INFORMATION

ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS  
TWA--See SECTION I. STEL = 35 ppm ammonia  
EFFECTS OF OVEREXPOSURE  
Inhalation: Vapor or mist can cause headache, nausea, and irritation of the nose, throat, and lungs.  
Skin Contact: Irritating to skin upon prolonged or repeated contact.  
Eye Contact: Slightly irritating to eyes.

### EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Remove subject to fresh air.  
Eye and Skin Contact: Flush eyes with a large amount of water for at least 15 minutes. See a physician if irritation persists. Wash affected skin areas with soap and water.

### STABILITY

☒ STABLE ☐ UNSTABLE

HAZARDOUS DECOMPOSITION PRODUCTS  
NA

### HAZARDOUS POLYMERIZATION

☐ MAY OCCUR ☒ WILL NOT OCCUR

HAZARDOUS POLYMERIZATION PRODUCTS  
NA

HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID  
WATER OTHER

### VI - SPILL OR LEAK PROCEDURE INFORMATION

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Keep spectators away. Floor may be slippery; use care to avoid falling. Dike and contain spill with inert material (e.g., sand, earth). Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for disposal. Keep spills and cleaning runoffs out of municipal sewers and open bodies of water.

WASTE DISPOSAL METHODS: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant liquid and flush to a chemical sewer. Landfill or incinerate the solids and the contaminated diking material according to local, state, and Federal regulations.

### VII - SPECIAL PROTECTION INFORMATION

#### VENTILATION TYPE

Mechanical local exhaust at point of contaminant (vapor or mist) release.

#### RESPIRATORY PROTECTION

None required if good ventilation is maintained. Otherwise wear MESA/NIOSH approved respirator suitable for vapor or mist concentrations encountered.

#### PROTECTIVE GLOVES

Impervious

#### EYE PROTECTION

Chemical splash goggles (ANSI Z-87.1 or approved equivalent)

#### OTHER PROTECTIVE EQUIPMENT

Eyewash facility, emergency shower

### VIII - STORAGE AND HANDLING INFORMATION

|  |        |        |              |         |
|--|--------|--------|--------------|---------|
| STORAGE TEMPERATURE<br>MAX. 60C/140F MIN. 1.1C/34F | INDOOR | HEATED | REFRIGERATED | OUTDOOR |
|--|--------|--------|--------------|---------|

PRECAUTIONARY LABELING: KEEP FROM FREEZING--PRODUCT MAY COAGULATE.

### IX - TOXICITY INFORMATION

The effects of overexposure shown in Section IV are based on acute toxicity profiles for a number of acrylic emulsions that are compositionally similar to this product. Typical values are: Rat, oral LD50: >5.0 g/kg; Rabbit, dermal LD50: >5.0 g/kg; Rabbit, skin irritation: practically nonirritating--72-hour Mean Irritation Score = 0 to 2; Rabbit, eye irritation: inconsequentially irritating.

### X - MISCELLANEOUS INFORMATION

NOTE: Monomer vapors can be evolved when product is heated during processing operations. In such a case, use local exhaust ventilation with a minimum capture velocity of 100 ft/min. (30 m/min.) at the point of monomer evolution. Refer to Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists.

FOOTNOTE TO SECTION I: NE-not established; NOT REQ or NA-not required.

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|  |                 |                           |                        |
|--|-----------------|---------------------------|------------------------|
| NA = NOT APPLICABLE<br>C = CEILING VALUE | KEY<br>903708-0 | DATE OF ISSUE<br>08/12/85 | SUPERSEDES<br>04/01/79 |
|--|-----------------|---------------------------|------------------------|

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CORPORATE PRODUCT INTEGRITY DEPARTMENT  
INDEPENDENCE MALL WEST  
PHILADELPHIA, PA 19105

EMERGENCY TELEPHONE  
215-582-3000 (ROHM AND HAAS)  
800-424-8300 (CHEMTREC)

HAZARD RATING FIRE  
1-EXTREME 2-HIGH 3-MODERATE 4-SLIGHT 5-INSIGNIFICANT  
TOXICITY  
1-SEVERE 2-MODERATE 3-SLIGHT 4-INSIGNIFICANT  
SPECIAL

LIST 8 MATERIAL SAFETY DATA SHEET OSHA HAZARDOUS

MATERIAL  
GLACIAL METHACRYLIC ACID - 250 ppm MEHQ

CODE  
65246

KEY  
905312-3

DOT HAZARD CLASS  
CORROSIVE MATERIAL

DATE ISSUED  
11/14/85

FORMULA  
C<sub>5</sub>H<sub>8</sub>O<sub>2</sub>

CHEMICAL NAME OR SYNONYMS  
Alpha-methyl acrylic acid

| I - COMPOSITIONAL INFORMATION |               |               |              |
|-------------------------------|---------------|---------------|--------------|
|                               | OSHA Reg. No. | APPROX. WT. % | TWA/TLV      |
| Methacrylic acid              | 79-41-4       | 98.5 min.     | 20 NE 20 ppm |
| Other acid adducts            | NOT REQ       | 1.0 max.      | NR NR NR     |
| Inhibitor: Hydroquinone (HQ)  | 123-31-9      | 0.001 max.    | 2 2 2 mg/MS  |
| 4-Methoxyphenol (MEHQ)        | 150-76-5      | 0.027 max.    | 10 NE 1 ppm  |

| II - PHYSICAL PROPERTY INFORMATION |   |                            |                                    |
|------------------------------------|---|----------------------------|------------------------------------|
| APPEARANCE: ODOOR: PH              | Clear colorless liquid; sharp acid odor |                            |                                    |
| MELTING OR FREEZING POINT          | BOILING POINT                           | VAPOR PRESSURE (MM HG)     | VAPOR DENSITY (AIR=1)              |
| 14C/58F                            | 160C/320F                               | 1 @ 20C/68F                | Greater than 1                     |
| SOLUBILITY IN WATER                | PERCENT VOLATILE (BY WEIGHT)            | SPECIFIC GRAVITY (WATER=1) | EVAPORATION RATE (BUTYL ACETATE=1) |
| 100%                               | 100                                     | 1.015                      | Less than 1                        |

| III - FIRE AND EXPLOSION HAZARD INFORMATION |  |                           |                           |
|---|--|---------------------------|---------------------------|
| FLASH POINT                                 | AUTO IGNITION TEMPERATURE  | LOWER EXPLOSION LIMIT (%) | UPPER EXPLOSION LIMIT (%) |
| 67C/153F TOC                                | 400C/752F  | No data                   | No data                   |
| EXTINGUISHING MEDIA                         | <input type="checkbox"/> FOAM <input type="checkbox"/> ALCOHOL <input checked="" type="checkbox"/> CO <sub>2</sub> <input checked="" type="checkbox"/> DRY CHEMICAL <input checked="" type="checkbox"/> WATER SPRAY <input type="checkbox"/> OTHER |                           |                           |
| SPECIAL FIRE FIGHTING PROCEDURES            | Wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent) and full protective gear. Use water spray to cool containers. Fight fire from a protected location - EXPLOSION HAZARD.                                |                           |                           |

UNUSUAL FIRE AND EXPLOSION HAZARDS  
Heat can cause polymerization. Heated sealed containers can explode.

| IV - HEALTH HAZARD INFORMATION  |  |
|---|--|
| ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS                        |  |
| TWA--See SECTION I. STEL = 30 ppm methacrylic acid; 4 mg/MS HQ; 15 ppm MEHQ |  |

EFFECTS OF OVEREXPOSURE  
Inhalation: Vapor or mist can irritate the nose and throat.  
Skin Contact: Severely irritating; possibly skin rash and sensitization. See Section IX.  
Eye Contact: Severely irritating; possibly permanent injury. See Section IX.  
Delayed Effects: Prolonged or repeated exposure can cause liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES  
Inhalation: Move subject to fresh air. Give artificial respiration if breathing has stopped. See a physician.

Eye and Skin Contact: IMMEDIATELY get under a safety shower. Flush eyes with water while removing contaminated clothes and flooding exposed skin areas with water. See a physician.

Ingestion: If swallowed dilute by giving 2 glasses of water to drink. See a physician. Never give anything by mouth to an unconscious person. NOTE: This is a corrosive liquid. Do not administer any other first aid before obtaining the advice of a physician.

STABILITY  
☒ STABLE ☐ UNSTABLE

CONDITIONS TO AVOID  
Heat, aging, contamination, oxygen-free atmosphere.

HAZARDOUS DECOMPOSITION PRODUCTS  
NA

HAZARDOUS POLYMERIZATION  
☐ MAY OCCUR ☒ WILL NOT OCCUR

CONDITIONS TO AVOID  
Heat; oxygen-free atmosphere; sunlight

INCOMPATIBILITY (MATERIALS TO AVOID)  
☐ WATER ☒ OTHER  
Organic peroxides, other oxidizing or reducing agents, acids and bases.

VI - SPILL OR LEAK PROCEDURE INFORMATION  
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  
Keep spectators away. Eliminate ignition sources. Use self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent), impervious clothing and boots. Dike and contain spill with inert material (e.g., sand, earth). Neutralize spill with sodium carbonate or dilute caustic. Flush to contaminated sewer system with large excess of water. Remove contaminated clothing promptly and wash affected skin areas with soap and water. Keep spills and cleaning runoffs out of municipal sewers and open bodies of water.  
NOTE: Spills on porous surfaces can contaminate groundwater.

WASTE DISPOSAL METHODS When discarded this material is a hazardous waste. RCRA 60-002 (corrosive); reportable quantity 100 lbs. (40 CFR Part 302) "Superfund". Incinerate liquid; neutralize the contaminated diking material with lime or soda ash, then incinerate, in accordance with local, state, and federal regulations.

VII - SPECIAL PROTECTION INFORMATION  
VENTILATION TYPE  
Mechanical local exhaust ventilation at point of contaminant release. (See Section X)  
RESPIRATORY PROTECTION  
None required if good ventilation is maintained. Otherwise wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH-approved or equivalent).  
PROTECTIVE GLOVES  
Impervious  
EYE PROTECTION  
Chemical splash goggles and face shield (ANSI Z-87.1).  
OTHER PROTECTIVE EQUIPMENT  
Eyewash facility, safety shower, impervious clothing.

VIII - STORAGE AND HANDLING INFORMATION  
STORAGE TEMPERATURE  
MAX 40C/104F MIN 18C/65F (1)  
INDOOR HEATED REFRIGERATED OUTDOOR  
Store out of direct sunlight in a cool place. Precautionary Labeling: Avoid freezing. If frozen thaw at 18-40C/65-104F with frequent agitation to redistribute the inhibitor. Leave air space over liquid surface in all containers. Material should be used within one year or retested for inhibitor according to Q1-18 (available from Rohm and Haas Company). Material stored in bulk should be tested for stability every month; drums and pails every 3 months. Use positive pressure to replace air in vapor spaces of containers after sampling.

IX - TOXICITY INFORMATION  
Acute oral LD50, rat: 2200 mg/kg.  
Acute dermal LD100, rabbit: 2000 mg/kg  
Inhalation LC50, rat: >1300 ppm.  
Skin irritation, rabbit: corrosive  
Eye irritation, rabbit: corrosive.

X - MISCELLANEOUS INFORMATION  
(1) Monomer stability is a logarithmic function of time vs. temperature. Stability is also dependent on inhibitor concentration, the presence of air and type of monomer. NOTE: Monomer vapors can be evolved when product is heated during processing operations. In such a case, use local exhaust ventilation with a minimum capture velocity of 100 ft/min. (30 m/min.) at the point of monomer evolution. Refer to Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists.  
FOOTNOTE TO SECTION I: NE=not established; NOT REQ or NR=not required.

NA = NOT APPLICABLE  
C = CEILING VALUE

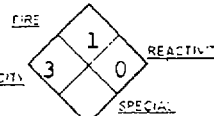
KEY  
905312-3

DATE OF ISSUE  
11/14/85

SUPERSEDES  
09/28/82

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PHILADELPHIA, PA 19105EMERGENCY TELEPHONE  
215-592-3000 (ROHM AND HAAS)  
800-424-9300 (CHEMTREC)**HAZARD RATING**4-EXTREME  
3-HIGH  
2-MODERATE  
1-SLIGHT  
0-INSIGNIFICANT  
\*SEE SECTION IV**MATERIAL SAFETY DATA SHEET**

OSHA HAZARDOUS

LIST 7

|                                      |  |                 |                                  |
|--------------------------------------|--|-----------------|----------------------------------|
| MATERIAL<br>TRITON® CF-21 Surfactant | CODE<br>61599  | KEY<br>904163-6 | DOT HAZARD CLASS<br>NONREGULATED |
| FORMULA<br>Not applicable            | CHEMICAL NAME OR SYNONYMS<br>Octylphenoxypolyethoxyethanol nonionic surfactant |                 |                                  |
| DATE ISSUED<br>03/19/86              |  |                 |                                  |

**I - COMPOSITIONAL INFORMATION**

|  |                    |                                       |
|--|--------------------|---------------------------------------|
| CAS REG. NO.<br>70955-69-0                 | APPROX WT %<br>100 | TWA/TLV<br>R&H OSHA ACGIH<br>NE NE NE |
| Octylphenoxypolyethoxypolypropoxy propanol |                    |                                       |

**II - PHYSICAL PROPERTY INFORMATION**

|  |  |
|--|--|
| APPEARANCE - ODOR - pH.<br>Clear, light amber liquid; mild odor; pH of 5% solution 5.0-7.0 | VISCOSITY<br>250 cps Brookfield          |
| MELTING OR FREEZING POINT<br>-30C/-22F pour point  | BOILING POINT<br>NA                      |
| SOLUBILITY IN WATER<br>Complete  | PERCENT VOLATILE (BY WEIGHT)<br>0        |
| VAPOR PRESSURE (mm Hg)<br>Nil @ 20C/68F  | VAPOR DENSITY (AIR=1)<br>NA              |
| SPECIFIC GRAVITY (WATER=1)<br>1.04   | EVAPORATION RATE (BUTYL ACETATE=1)<br><1 |

**III - FIRE AND EXPLOSION HAZARD INFORMATION**

|   |                                 |                                 |                                 |
|---|---------------------------------|---------------------------------|---------------------------------|
| FLASH POINT<br>>249C/480F TOC   | AUTO IGNITION TEMPERATURE<br>NA | LOWER EXPLOSION LIMIT (%)<br>NA | UPPER EXPLOSION LIMIT (%)<br>NA |
| EXTINGUISHING MEDIA<br><input checked="" type="checkbox"/> FOAM <input type="checkbox"/> "ALCOHOL" FOAM <input checked="" type="checkbox"/> CO <sub>2</sub> <input checked="" type="checkbox"/> DRY CHEMICAL <input checked="" type="checkbox"/> WATER SPRAY <input type="checkbox"/> OTHER |                                 |                                 |                                 |

**SPECIAL FIRE FIGHTING PROCEDURES**

Wear respirator (pressure-demand, self-contained breathing apparatus, MSHA/NIOSH-approved or equivalent) and full protective gear.

**UNUSUAL FIRE AND EXPLOSION HAZARDS****IV - HEALTH HAZARD INFORMATION**ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS  
See Section I.**EFFECTS OF OVEREXPOSURE**Eye Contact: Severely irritating to eyes; possibly permanent injury.Skin Contact: Irritating to skin upon repeated or prolonged contact.**EMERGENCY AND FIRST AID PROCEDURES**Inhalation: Move subject to fresh air.Eye and Skin Contact: Flush eyes with a large amount of water for at least 15 minutes. Get prompt medical attention. Wash skin thoroughly with soap and water. Remove and wash clothing before reuse.Ingestion: If swallowed dilute by giving 2 glasses of water to drink. See a physician. Never give anything by mouth to an unconscious person.

JS 031354

MKIL05226

# **V - REACTIVITY INFORMATION**

|  |  |                                       |
|--|--|---------------------------------------|
| STABILITY<br><input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE  |  | CONDITIONS TO AVOID<br>Excessive heat |
| HAZARDOUS DECOMPOSITION PRODUCTS   |  |                                       |
| HAZARDOUS POLYMERIZATION<br><input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR                              |  | CONDITIONS TO AVOID<br>None           |
| INCOMPATIBILITY (MATERIALS TO AVOID)<br><input type="checkbox"/> WATER <input type="checkbox"/> OTHER    Strong oxidizing and reducing agents. |  |                                       |

# **VI - SPILL OR LEAK PROCEDURE INFORMATION**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate ignition sources. Ventilate area. Avoid breathing (vapor/dust). Evacuate the spill area. Floor may be slippery; use care to avoid falling. Wear respirator suitable for (vapor) concentration encountered (MSHA/NIOSH-approved or equivalent). Dike and contain spill with inert material (e.g., sand, earth). Scoop or shovel solid material into a suitable container for recovery or disposal. Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for disposal.

WASTE DISPOSAL METHODS    In accordance with local, state, and federal regulations: incinerate liquid; landfill contaminated diking material. (Landfill must be large enough to absorb the surfactant, because significant quantities reaching a stream or treatment plant via leachate can cause foaming.)

# **VII - SPECIAL PROTECTION INFORMATION**

|  |   |
|--|---|
| VENTILATION TYPE<br>Normal room ventilation.                                       |   |
| RESPIRATORY PROTECTION<br>None required for normal operations.                     |   |
| PROTECTIVE GLOVES<br>Impervious  | EYE PROTECTION<br>Chemical splash goggles (ANSI Z-87.1) |
| OTHER PROTECTIVE EQUIPMENT<br>Safety shower, eyewash facility, protective clothing |   |

# **VIII - STORAGE AND HANDLING INFORMATION**

|   |        |        |              |         |
|---|--------|--------|--------------|---------|
| STORAGE TEMPERATURE   | INDOOR | HEATED | REFRIGERATED | OUTDOOR |
| MAX.                  MIN.  | YES    | NO     | NO           | YES     |
| Low temperature storage can cause handling problems. Viscosity of material will increase. |        |        |              |         |

# **IX - TOXICITY INFORMATION**

Oral LD50 rat: 3850 mg/kg  
 Dermal LD50 rabbit: 3 g/kg  
 Eye irritation rabbit: severe irritation; blood vessels growing onto cornea.  
 Skin irritation rabbit: Primary Irritation Score of 0.1

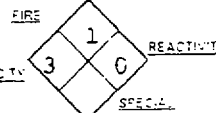
# **X - MISCELLANEOUS INFORMATION**

**FOOTNOTE TO SECTION I:**    NE = None established.

JS 031355

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|  |                 |   |                        |
|--|-----------------|---|------------------------|
| NA = NOT APPLICABLE<br>C = CEILING VALUE   | KEY<br>904163-6 | DATE OF ISSUE<br>03/19/86   | SUPERSEDES<br>11/22/85 |
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PHILADELPHIA, PA 19105EMERGENCY TELEPHONE  
215-592-3000 (ROHM AND HAAS)  
800-424-9300 (CHEMTREC)**HAZARD RATING**4=EXTREME  
3=HIGH  
2=MODERATE  
1=SLIGHT  
0=INSIGNIFICANT  
\*\*SEE SECTION IV**MATERIAL SAFETY DATA SHEET**

OSHA HAZARDOUS

LIST 7

|   |                                |                        |   |
|---|--------------------------------|------------------------|---|
| MATERIAL<br><b>TRITON® N-60 Surfactant</b>  | CODE<br><b>61860</b>           | KEY<br><b>904219-0</b> | DOT HAZARD CLASS<br><b>NONREGULATED</b> |
| FORMULA<br><b>Not applicable</b>  | DATE ISSUED<br><b>11/21/85</b> |                        |   |
| CHEMICAL NAME OR SYNONYMS<br><b>Nonylphenoxypolyethoxyethanol nonionic surfactant</b> |                                |                        |   |

**I - COMPOSITIONAL INFORMATION**

|                               |                                   |                           |   |
|-------------------------------|-----------------------------------|---------------------------|---|
| Nonylphenoxypolyethoxyethanol | CAS REG. NO.<br><b>68412-54-4</b> | APPROX WT %<br><b>100</b> | TWA/TLV<br><b>R&amp;H OSHA ACGIH<br/>NE NE NE</b> |
|-------------------------------|-----------------------------------|---------------------------|---|

**II - PHYSICAL PROPERTY INFORMATION**

|   |  |  |  |
|---|--|--|--|
| APPEARANCE · ODOR · pH<br><b>Clear yellow oil; mild odor; pH (5%) 6.0</b> |  | VISCOSITY<br><b>300 cps Brookfield</b>         |  |
| MELTING OR FREEZING POINT<br><b>-32C/-25F pour point</b>                  | BOILING POINT<br><b>NA</b>               | VAPOR PRESSURE (mm Hg)<br><b>Nil @ 20C/68F</b> | VAPOR DENSITY (AIR=1)<br><b>NA</b>                 |
| SOLUBILITY IN WATER<br><b>Dispersible</b>                                 | PERCENT VOLATILE (BY WEIGHT)<br><b>0</b> | SPECIFIC GRAVITY (WATER=1)<br><b>1.042</b>     | EVAPORATION RATE (BUTYL ACETATE=1)<br><b>&lt;1</b> |

**III - FIRE AND EXPLOSION HAZARD INFORMATION**

|   |  |  |  |
|---|--|--|--|
| FLASH POINT<br><b>&gt;260C/500F COC</b>   | AUTO IGNITION TEMPERATURE<br><b>NA</b> | LOWER EXPLOSION LIMIT (%)<br><b>NA</b> | UPPER EXPLOSION LIMIT (%)<br><b>NA</b> |
| EXTINGUISHING MEDIA<br><input checked="" type="checkbox"/> FOAM <input type="checkbox"/> "ALCOHOL" FOAM <input checked="" type="checkbox"/> CO <sub>2</sub> <input checked="" type="checkbox"/> DRY CHEMICAL <input checked="" type="checkbox"/> WATER SPRAY <input type="checkbox"/> OTHER |  |  |  |
| SPECIAL FIRE FIGHTING PROCEDURES<br><b>Wear respirator (pressure-demand, self-contained breathing apparatus, MSHA/NIOSH-approved or equivalent) and full protective gear.</b>   |  |  |  |
| UNUSUAL FIRE AND EXPLOSION HAZARDS  |  |  |  |

**IV - HEALTH HAZARD INFORMATION**

|   |  |
|---|--|
| ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS<br><b>See Section I.</b>   |  |
| EFFECTS OF OVEREXPOSURE<br><b>Eye Contact: Severely irritating to eyes; possibly permanent injury.</b><br><b>Skin Contact: Severely irritating to skin.</b>   |  |
| EMERGENCY AND FIRST AID PROCEDURES<br><b>Inhalation: Move subject to fresh air.</b><br><b>Eye and Skin Contact: Flush eyes with a large amount of water for at least 15 minutes. Get prompt medical attention. Wash skin thoroughly with soap and water. Remove and wash clothing before reuse.</b><br><b>Ingestion: If swallowed dilute by giving 2 glasses of water to drink. See a physician. Never give anything by mouth to an unconscious person.</b> |  |

JS 031356

MKIL05228

**V - REACTIVITY INFORMATION**

|   |  |                                       |
|---|--|---------------------------------------|
| STABILITY<br><input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE                         |  | CONDITIONS TO AVOID<br>Excessive heat |
| HAZARDOUS DECOMPOSITION PRODUCTS  |  |                                       |
| HAZARDOUS POLYMERIZATION<br><input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR |  | CONDITIONS TO AVOID<br>None           |
| INCOMPATIBILITY (MATERIALS TO AVOID)<br><input type="checkbox"/> WATER <input type="checkbox"/> OTHER             |  | Strong oxidizing and reducing agents. |

**VI - SPILL OR LEAK PROCEDURE INFORMATION**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate ignition sources. Ventilate area. Avoid breathing (vapor/dust). Evacuate the spill area. Floor may be slippery; use care to avoid falling. Wear respirator suitable for (vapor) concentration encountered (MSHA/NIOSH-approved or equivalent). Dike and contain spill with inert material (e.g., sand, earth). Scoop or shovel solid material into a suitable container for recovery or disposal. Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for disposal.

WASTE DISPOSAL METHODS In accordance with local, state, and federal regulations: incinerate liquid; landfill contaminated diking material. (Landfill must be large enough to absorb the surfactant, because significant quantities reaching a stream or treatment plant via leachate can cause foaming.)

**VII - SPECIAL PROTECTION INFORMATION**

|  |   |
|--|---|
| VENTILATION TYPE<br>Normal room ventilation.                                       |   |
| RESPIRATORY PROTECTION<br>None required for normal operations.                     |   |
| PROTECTIVE GLOVES<br>Impervious  | EYE PROTECTION<br>Chemical splash goggles (ANSI Z-87.1) |
| OTHER PROTECTIVE EQUIPMENT<br>Safety shower, eyewash facility, protective clothing |   |

**VIII - STORAGE AND HANDLING INFORMATION**

|   |  |               |              |                    |                |
|---|--|---------------|--------------|--------------------|----------------|
| STORAGE TEMPERATURE<br>MAX. MIN.  |  | INDOOR<br>YES | HEATED<br>NO | REFRIGERATED<br>NO | OUTDOOR<br>YES |
| Low temperature storage can cause handling problems. Viscosity of material will increase. |  |               |              |                    |                |

**IX - TOXICITY INFORMATION**

Acute oral LD50 rat: <5 g/kg  
Dermal LD50 rabbit: greater than 3 g/kg  
Eye irritation: severe irritation (not reversible in 21 days). Blood vessels growing onto cornea.  
Skin irritation: severe irritation; Primary Irritation Score 6.6

**X - MISCELLANEOUS INFORMATION**

NE=None established

JS 031357

TRITON® IS A TRADEMARK OF ROHM AND HAAS COMPANY OR ONE OF ITS SUBSIDIARIES OR AFFILIATES.

|  |                 |   |                        |
|--|-----------------|---|------------------------|
| NA - NOT APPLICABLE<br>C - CEILING VALUE   | KEY<br>904219-0 | DATE OF ISSUE<br>11/21/85   | SUPERSEDES<br>12/19/83 |
| THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. |                 | ROHM AND HAAS COMPANY ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE TO VENDEES, USERS OR THIRD PARTIES CAUSED BY THE MATERIAL. SUCH VENDEES OR USERS ASSUME ALL RISKS ASSOCIATED WITH THE USE OF THE MATERIAL. |                        |

MKIL05229




# MATERIAL SAFETY DATA SHEET

*GEEB*  
97002-IREV 1-83

MSDS NUMBER ▶ 5,200-3

PAGE 1 OF 4

| SECTION I          |   | NAME   | 24 HOUR EMERGENCY ASSISTANCE  |  |               |
|--------------------|---|--|---|--|---------------|
| PRODUCT            | ▶ | Butyl OXITOL® Glycol Ether                                   | SHELL 713-473-9461  |  HEALTH 2 |               |
| CHEMICAL/ SYNONYMS | ▶ | 2-butoxyethanol; ethylene glycol monobutyl ether <i>GEEB</i> | CHEMTREC 800-424-9300   |  |               |
| CHEMICAL FAMILY    | ▶ | Glycol ether   | <b>HAZARD RATING</b><br>LEAST 0 SLIGHT 1<br>MODERATE 2 HIGH 3 EXTREME 4 |  |               |
| SHELL CODE         | ▶ | 32351  |   |  | C.A.S. NUMBER |

| SECTION II      |     | INGREDIENTS   |
|-----------------|-----|---|
| COMPOSITION     | %   | TOXICITY DATA   |
| 2-butoxyethanol | 100 | Oral LD <sub>50</sub> (rat) = 0.5-3.0 g/kg<br>Dermal LD <sub>50</sub> (rabbit) = 0.4 g/kg<br>Inh LC <sub>50</sub> (mouse) = 700ppm (7 hr) |

**SECTION III HEALTH INFORMATION**

Vapors may be irritating to nose and throat, and liquid or vapor contact can cause painful eye irritation. Symptoms of overexposure may include headache, nausea, vomiting, drowsiness and unconsciousness.

Prolonged breathing of non-irritating concentrations may result in damage to the liver, kidneys, lungs, and red blood cells causing blood in the urine. Repeated skin contact to liquid can be mildly irritating, and skin absorption can occur which may cause symptoms similar to those seen after inhalation exposure.

Inhalation exposure of pregnant rabbits caused some toxicity to the mother and fetus at 200 ppm, but there were no effects at 100 ppm and below. Inhalation exposure to pregnant rats caused some toxicity to the mother and fetus at 200 and 100 ppm, but there were no effects at 50 ppm and below. Butyl OXITOL did not cause birth defects in either study.

| SECTION IV    |   | OCCUPATIONAL EXPOSURE LIMITS |
|---------------|---|------------------------------|
| ACGIH-TLV/TWA | = | 25ppm (Skin)                 |
| -TLV/STEL     | = | 75ppm (Skin)                 |
| OSHA-PEL/TWA  | = | 50ppm (Skin)                 |
| -PEL/Ceiling  | = | None established             |

MK00040571

MKIL14949



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER

5,200-3  
PAGE 2 OF 4

97003 (1-81)

## SECTION V

## EMERGENCY AND FIRST AID PROCEDURES

**EYE CONTACT:** Flush with water for 15 minutes while holding eyelids open. Get medical attention.

**SKIN CONTACT:** Wash with soap and water. Remove contaminated clothing and shoes; do not reuse until cleaned. If persistent irritation occurs, get medical attention.

**INHALATION:** Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

**INGESTION:** Do not give liquids if victim is unconscious or very drowsy. Otherwise, give no more than 2 glasses of water and induce vomiting by giving 30cc (2 tablespoons) Syrup of Ipecac. If Ipecac is unavailable, give 2 glasses of water and induce vomiting by touching finger to back of victim's throat. Keep victim's head below hips while vomiting. Get medical attention.

**\*NOTE TO THE PHYSICIAN:** If victim is a child, give no more than 1 glass of water and 15cc (1 tablespoon) Syrup of Ipecac. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage should be considered following intubation with a cuffed endotracheal tube.

## SECTION VI

## PHYSICAL DATA

|  |   |                                  |
|--|---|----------------------------------|
| BOILING POINT (°F) ▶ 340                     | MELTING POINT (°F) ▶ --                   | VAPOR PRESSURE (mmHg) ▶ 0.6@68°F |
| SPECIFIC GRAVITY (H <sub>2</sub> O=1) ▶ 0.90 | % VOLATILE BY VOLUME ▶ --                 | VAPOR DENSITY (AIR=1) ▶ 4.1      |
| SOLUBILITY IN WATER ▶ Complete               | EVAPORATION RATE (BUTYL ACETATE=1) ▶ 0.07 |                                  |

### APPEARANCE AND ODOR

Clear, colorless liquid. Mild odor.

## SECTION VII

## FIRE AND EXPLOSION HAZARDS

### FLASH POINT AND METHOD USED

138°F (TCC)

### EXTINGUISHING MEDIA

Use water fog, "alcohol" foam, dry chemical or CO<sub>2</sub>.

### FLAMMABLE LIMITS/% VOLUME IN AIR

LOWER

UPPER

--

--

### SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Caution. Combustible. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure NIOSH approved self-contained breathing apparatus. Cool fire exposed containers with water.

### UNUSUAL FIRE AND EXPLOSION HAZARDS

Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure.

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MKIL14950



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,200-3  
PAGE 3 OF 4

97004 (10-79)

**SECTION VIII****REACTIVITY**STABILITY ▶ ☐ UNSTABLE ☒ STABLEHAZARDOUS POLYMERIZATION ▶ ☐ MAY OCCUR ☒ WILL NOT OCCUR**CONDITIONS AND MATERIALS TO AVOID**

Avoid contact with aluminum surfaces. Will attack aluminum if the surface oxide film is penetrated (i.e., by abrasion or high temperatures) which can result in the release of hydrogen gas.

**HAZARDOUS DECOMPOSITION PRODUCTS**

Carbon monoxide and unidentified organic compounds may be released during combustion.

**SECTION IX****EMPLOYEE PROTECTION****RESPIRATORY PROTECTION**

If exposure may or does exceed occupational exposure limits (Sec.IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

**PROTECTIVE CLOTHING**

Wear impervious gloves and protective clothing as required to prevent skin contact. Wear chemical goggles to prevent eye contact.

**ADDITIONAL PROTECTIVE MEASURES**

Use explosion-proof ventilation as required to control vapor concentrations.

**SECTION X****ENVIRONMENTAL PROTECTION****SPILL OR LEAK PROCEDURES**

Caution. Combustible.

Large spills: Eliminate potential sources of ignition. Wear appropriate respirator and other protective clothing. Shut off source of leak only if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; place in non-leaking containers and seal tightly for proper disposal. Flush area with water to remove trace residue; dispose of flush solution as above.

Small spills: take up with an absorbent material and place in non-leaking containers for proper disposal.

**WASTE DISPOSAL**

Place in a disposal facility approved under RCRA regulations for hazardous waste (See Sec. XIII). Use non-leaking containers, seal tightly and label properly.

**ENVIRONMENTAL HAZARDS**

Releases to the environment may be reportable under environmental regulations. See p. 4 - S.XIII for additional information.

MK00040573

MKIL14951



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,200-3  
PAGE 4 OF 4

97005 (REV. 7-82)

**SECTION XI****SPECIAL PRECAUTIONS**

**CAUTION. COMBUSTIBLE.** Keep liquid and vapor away from heat, sparks or flame. Surfaces that are sufficiently hot may ignite even liquid product in the absence of sparks or flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors are gone. Do NOT cut, drill, grind or weld on or near container; even emptied containers can contain explosive vapors. Vapors may accumulate and travel to ignition sources distant from the handling site; flashfire can result. Keep container tightly closed. Use with adequate ventilation. Aluminum containers are not recommended for use in storage.

**WARNING! CAUSES EYE IRRITATION.** Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Avoid prolonged or repeated breathing of vapor. Wash thoroughly after handling. Air-dry contaminated clothing in a well ventilated area, then launder before reusing.

**SECTION XII****TRANSPORTATION REQUIREMENTS**

|  |   |  |  |  |
|--|---|--|--|--|
| DEPARTMENT<br>OF<br>TRANSPORTATION<br>CLASSIFICATION | <input type="checkbox"/> FLAMMABLE LIQUID | <input checked="" type="checkbox"/> COMBUSTIBLE LIQUID | <input type="checkbox"/> OXIDIZING MATERIAL  | <input type="checkbox"/> NON-FLAMMABLE GAS                   |
|  | <input type="checkbox"/> FLAMMABLE SOLID  | <input type="checkbox"/> POISON, CLASS A               | <input type="checkbox"/> CORROSIVE MATERIAL  | <input type="checkbox"/> NOT HAZARDOUS BY D.O.T. REGULATIONS |
|  | <input type="checkbox"/> FLAMMABLE GAS    | <input type="checkbox"/> POISON, CLASS B               | <input type="checkbox"/> IRRITATING MATERIAL | <input type="checkbox"/> OTHER—Specify below                 |

D.O.T. PROPER SHIPPING NAME

Solvent, n.o.s.

OTHER REQUIREMENTS

D.O.T. ID.# = NA1993. Guide Sheet 26. Not regulated by D.O.T. if in a container of less than 110 gallon capacity.

**SECTION XIII****OTHER REGULATORY CONTROLS**

EPA, FDA, OSHA, USDA, CPSC, etc.

EPA - Resource Conservation and Recovery Act

If this product becomes a waste material, it would be an ignitable hazardous waste (40 CFR 261.21), hazardous waste number D001.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

**BE SAFE**

READ OUR PRODUCT  
SAFETY INFORMATION  
... AND  
PASS IT ON

[PRODUCT LIABILITY LAW  
REQUIRES IT]

Manager

SHELL OIL COMPANY  
PRODUCT SAFETY AND COMPLIANCE  
OIL AND CHEMICAL PRODUCTS  
P.O. BOX 4320  
HOUSTON, TEXAS 77210

DATE PREPARED

September 17, 1984

MK00040574

MKIL14952



# MATERIAL SAFETY DATA SHEET

97367 (4-85)

MSDS NUMBER ▶

5,200-5

PAGE 1

|  |           |                 |   |  |  |
|--|-----------|-----------------|---|--|--|
| 24 HOUR EMERGENCY ASSISTANCE   |           |                 | GENERAL MSDS ASSISTANCE   |  |  |
| SHELL: 713-473-9461 CHEMTREC: 800-424-9300                                   |           |                 | SHELL: 713-241-4819   |  |  |
| ACUTE HEALTH<br>+ 3  | FIRE<br>2 | REACTIVITY<br>0 | HAZARD RATING ▶<br>LEAST - 0    SLIGHT - 1    MODERATE - 2<br>HIGH - 3    EXTREME - 4 |  |  |
| *For acute and chronic health effects refer to the discussion in Section III |           |                 |   |  |  |

**BE SAFE**  
READ OUR PRODUCT  
SAFETY INFORMATION  
... AND  
PASS IT ON  
(PRODUCT LIABILITY LAW  
REQUIRES IT)

|                   |  |      |  |
|-------------------|--|------|--|
| <b>SECTION I</b>  |  | NAME |  |
| PRODUCT ▶         | BUTYL OXITOL(R)  |      |  |
| CHEMICAL NAME ▶   | 2-BUTOXYETHANOL (2-BE), ETHYLENE GLYCOL MONOBUTYL ETHER (EGBE) |      |  |
| CHEMICAL FAMILY ▶ | GLYCOL ETHER   |      |  |
| SHELL CODE ▶      | 32351  |      |  |

| SECTION II-A |                 | PRODUCT/INGREDIENT |         |
|--------------|-----------------|--------------------|---------|
| NO.          | COMPOSITION     | CAS NUMBER         | PERCENT |
| P            | 2-BUTOXYETHANOL | 111-76-2           | 100     |

| SECTION II-B |                    | ACUTE TOXICITY DATA |                       |
|--------------|--------------------|---------------------|-----------------------|
| NO.          | ACUTE ORAL LD50    | ACUTE DERMAL LD50   | ACUTE INHALATION LC50 |
| P            | 0.5-3.0 G/KG (RAT) | 0.4 G/KG (RABBIT)   | 450 PPM (RAT) 4 HR.   |

## SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

### EYE CONTACT

BASED ON PRODUCT TESTING, PRODUCT IS SEVERELY IRRITATING TO THE EYES.

### SKIN CONTACT

BASED ON PRODUCT TESTING, PRODUCT IS MILDLY IRRITATING TO THE SKIN AND TOXIC IF ABSORBED THROUGH THE SKIN.

### INHALATION

BASED ON PRODUCT TESTING, VAPORS MAY CAUSE IRRITATION TO THE NOSE, THROAT AND RESPIRATORY TRACT AND ARE ACUTELY TOXIC IF INHALED.

### INGESTION

BASED ON PRODUCT TESTING, PRODUCT IS MODERATELY TOXIC IF INGESTED.

### SIGNS AND SYMPTOMS

IRRITATION AS NOTED ABOVE.

### AGGRAVATED MEDICAL CONDITIONS

PREEXISTING SKIN, EYE AND LUNG DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO 2-BUTOXYETHANOL.

JS 031346

MKIL05218

PRODUCT NAME: BUTYL DIXITOL(R)

MSDS 5,200-5  
PAGE 2

SEE SECTION VI FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

| NO. | OSHA<br>PEL/TWA | PEL/CEILING | ACGIH<br>TLV/TWA | TLV/STEL      | OTHER              |
|-----|-----------------|-------------|------------------|---------------|--------------------|
| 1   | 50 PPM (SKIN)   |             | 25 PPM (SKIN)    | 75 PPM (SKIN) | 25 PPM-8-12HR TWA* |
| 1   |                 |             |                  |               | 40 PPM-15MIN PEAK* |

\* SHELL INTERNAL STANDARD (SKIN NOTATION)

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT

IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN.  
GET MEDICAL ATTENTION.

SKIN CONTACT

FLUSH SKIN WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION

REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL  
RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION

DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE NO MORE THAN 2  
GLASSES OF WATER AND INDUCE VOMITING BY GIVING 30CC (2 TABLESPOONS) SYRUP OF IPECAC.\* IF IPECAC IS  
UNAVAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF VICTIM'S  
THROAT. KEEP VICTIM'S HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN

IF VICTIM IS A CHILD, GIVE NO MORE THAN 1 GLASS OF WATER AND 15CC (1 TABLESPOON) SYRUP OF IPECAC.  
IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OF UNCONSCIOUSNESS OCCUR BEFORE EMESIS,  
GASTRIC LAVAGE SHOULD BE CONSIDERED FOLLOWING INTUBATION WITH A CUFFED ENDOTRACHEAL TUBE.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

EXPOSURE OF RATS BY INHALATION TO 2-BE CAUSED HEMOLYSIS, HEMOGLOBINURIA (BLOOD IN THE URINE) AND A  
SLIGHT INCREASE IN LIVER WEIGHT. OTHER SPECIES, INCLUDING MAN, WERE LESS SENSITIVE OR MORE  
RESISTANT TO HEMOLYSIS. THE HEMOLYTIC EFFECT IN RATS WAS TRANSITORY AND/OR REVERSIBLE AND NOT  
CONSIDERED TO BE RELEVANT TO HUMAN HEALTH. INHALATION EXPOSURE OF PREGNANT RABBITS CAUSED SOME  
LETHALITY TO THE DAM AND FETUS AT 200 PPM, BUT THERE WERE NO EFFECTS AT 100 PPM AND BELOW.  
INHALATION EXPOSURE TO PREGNANT RATS CAUSED IRRITANCY TO THE DAMS AND RELATED FETOTOXICITY AT 200  
AND 100 PPM, BUT THERE WERE NO EFFECTS AT 50 PPM AND BELOW. 2-BE DID NOT CAUSE BIRTH DEFECTS IN  
EITHER STUDY.

SECTION VII PHYSICAL DATA

|   |                                    |  |
|---|------------------------------------|--|
| BOILING POINT: 340<br>(DEG F)           | SPECIFIC GRAVITY: 0.90<br>(H2O=1)  | VAPOR PRESSURE: 0.6 @68 DEG F<br>(MM HG) |
| MELTING POINT: NOT AVAILABLE<br>(DEG F) | SOLUBILITY: COMPLETE<br>(IN WATER) | VAPOR DENSITY: 4.1<br>(AIR=1)            |

JS 031347

MKIL05219

PRODUCT NAME: BUTYL OXITOL(R)

MSDS 5,200-5  
PAGE 3

EVAPORATION RATE (N-BUTYL ACETATE = 1): NOT APPLICABLE

APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID. MILD ODOR.

---

## SECTION VIII

## FIRE AND EXPLOSION HAZARDS

---

FLASH POINT AND METHOD:  
138 DEG F, TCC

FLAMMABLE LIMITS % VOLUME IN AIR  
LOWER: N/AV UPPER: N/AV

### EXTINGUISHING MEDIA

USE WATER FOG, "ALCOHOL" FOAM, DRY CHEMICAL OR CO2.

### SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

CAUTION. COMBUSTIBLE. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE CONTAINERS WITH WATER.

### UNUSUAL FIRE AND EXPLOSION HAZARDS

CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE.

---

## SECTION IX

## REACTIVITY

---

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

### CONDITIONS AND MATERIALS TO AVOID:

AVOID HEAT, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS. AVOID CONTACT WITH ALUMINUM SURFACES. IF THE SURFACE ALUMINUM OXIDE FILM IS REMOVED, RELEASE OF HYDROGEN GAS CAN RESULT.

### HAZARDOUS DECOMPOSITION PRODUCTS

CARBON MONOXIDE AND UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED DURING COMBUSTION.

---

## SECTION X

## EMPLOYEE PROTECTION

---

### RESPIRATORY PROTECTION

AVOID BREATHING VAPOR. IF EXPOSURE MAY OR DOES EXCEED OCCUPATIONAL EXPOSURE LIMITS (SEC. IV) USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134 USE EITHER A FULL-FACE, ATMOSPHERE-SUPPLYING RESPIRATOR OR AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.

### PROTECTIVE CLOTHING

AVOID CONTACT WITH EYES. WEAR CHEMICAL GOGGLES IF THERE IS LIKELIHOOD OF CONTACT WITH EYES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR CHEMICAL-RESISTANT GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT. TEST DATA FROM PUBLISHED LITERATURE AND/OR GLOVE AND CLOTHING MANUFACTURERS INDICATE THE BEST PROTECTION IS PROVIDED BY NEOPRENE.

### ADDITIONAL PROTECTIVE MEASURES

USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS. EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE FOR EMERGENCY USE.

---

## SECTION XI

## ENVIRONMENTAL PROTECTION

---

### SPILL OR LEAK PROCEDURES

CAUTION. COMBUSTIBLE. \*\*\* LARGE SPILLS \*\*\* ELIMINATE POTENTIAL SOURCES OF IGNITION. WEAR APPROPRIATE RESPIRATOR AND OTHER PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND, OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS AND SEAL TIGHTLY FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTION AS ABOVE. \*\*\* SMALL SPILLS \*\*\* TAKE UP AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL.

JS 031348

MKIL05220

PRODUCT NAME: BUTYL OXITOL(R)

MSDS 5,200-5  
PAGE 4

#### WASTE DISPOSAL

UNDER EPA - RCRA (40 CFR 251.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

#### ENVIRONMENTAL HAZARDS

EPA - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT. UNDER EPA-CERCLA ("SUPERFUND") RELEASES TO AIR, LAND OR WATER MAY BE REPORTABLE TO THE NATIONAL RESPONSE CENTER. 800-424-8802 (CIRCUMSTANCES SURROUNDING THE RELEASE AND CLEANUP DETERMINE REPORTABILITY).

---

#### SECTION XII

#### SPECIAL PRECAUTIONS

---

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE.

VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM THE HANDLING SITE; FLASH FIRE CAN RESULT. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE (ONLY) WITH ADEQUATE VENTILATION.

CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS. STATIC ELECTRICITY MAY ACCUMULATE AND CREATE A FIRE HAZARD. GROUND FIXED EQUIPMENT. BOND AND GROUND TRANSFER CONTAINERS AND EQUIPMENT.

WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE.

---

#### SECTION XIII

#### TRANSPORTATION REQUIREMENTS

---

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: COMBUSTIBLE LIQUID  
D.O.T. PROPER SHIPPING NAME: COMBUSTIBLE LIQUID, N.O.S.

#### OTHER REQUIREMENTS:

NA1993, GUIDE 26. NOT REGULATED BY DOT IF IN A CONTAINER LESS THAN 110 GAL CAPACITY.

---

#### SECTION XIV

#### OTHER REGULATORY CONTROLS

---

THIS PRODUCT IS LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES

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THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

---

DATE PREPARED: JANUARY 13, 1986

---

JOHN P. SEPESE

---

BE SAFE

READ OUR PRODUCT  
SAFETY INFORMATION ...AND PASS IT ON  
(PRODUCT LIABILITY LAW  
REQUIRES IT)

SHELL OIL COMPANY  
PRODUCT SAFETY AND COMPLIANCE  
P. O. BOX 4320  
HOUSTON, TX 77210

JS 031349

MKIL05221



SHELL OIL COMPANY  
SHELL CHEMICAL COMPANY  
SHELL DEVELOPMENT COMPANY  
SHELL PIPE LINE CORPORATION

MSDS 7750-1

HAZARD  
RATING



# MATERIAL SAFETY DATA SHEET

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

| SECTION I  |   |
|--|---|
| MANUFACTURER'S NAME<br>Shell Chemical Company  | EMERGENCY TELEPHONE NO.<br>713-473-9461 |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>One Shell Plz., P. O. Box 2463, Houston, TX 77001 |   |
| CHEMICAL NAME AND SYNONYMS<br>Toluene, Methyl Benzene  | TRADE NAME<br>Shell Toluene             |
| CHEMICAL FAMILY<br>Aromatic Hydrocarbon  | FORMULA<br>$C_6H_5 - CH_3$              |

| SECTION II HAZARDOUS INGREDIENTS* |     |         |                  |        |                  |       |
|-----------------------------------|-----|---------|------------------|--------|------------------|-------|
| COMPOSITION                       | %   | SPECIES | LD <sub>50</sub> |        | LC <sub>50</sub> |       |
|                                   |     |         | ORAL             | DERMAL | CONCENTRATION    | HOURS |
| Toluene                           | 100 | Rats    | 1.7 g/kg         |        | 5,300 ppm        | 4     |
|                                   |     | Rabbit  |                  | 4 g/kg |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |
|                                   |     |         |                  |        |                  |       |

| SECTION III PHYSICAL DATA           |                                      |  |       |
|-------------------------------------|--------------------------------------|--|-------|
| BOILING POINT (°F)                  | 230-231                              | SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F | 0.871 |
| VAPOR PRESSURE (mmHg) @ 68°F (20°C) | 22                                   | PERCENT VOLATILE BY VOLUME (%)               |       |
| VAPOR DENSITY (AIR=1)               | 3.2                                  | EVAPORATION RATE (n-BuAc = 1)                | 2.0   |
| SOLUBILITY IN WATER                 | Negligible                           |  |       |
| APPEARANCE AND ODOR                 | Colorless liquid with aromatic odor. |  |       |

| SECTION IV FIRE AND EXPLOSION HAZARD DATA |  |                  |   |     |     |     |     |
|---|--|------------------|---|-----|-----|-----|-----|
| FLASH POINT (Method used)                 | Tag Closed Cup 41°F  | FLAMMABLE LIMITS | <table border="1"> <tr> <td>LeL</td> <td>UeL</td> </tr> <tr> <td>1.0</td> <td>7.0</td> </tr> </table> | LeL | UeL | 1.0 | 7.0 |
| LeL                                       | UeL  |                  |   |     |     |     |     |
| 1.0                                       | 7.0  |                  |   |     |     |     |     |
| EXTINGUISHING MEDIA                       | Handle as FLAMMABLE LIQUID. Use foam, CO <sub>2</sub> , steam, water-fog, dry chemicals.   |                  |   |     |     |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES          | Do not use water, exclude air. Use water spray to cool exposed drums. Wear self-contained breathing apparatus. Consult local fire marshal. |                  |   |     |     |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS        | None unusual.  |                  |   |     |     |     |     |
|   |  | JS 034277        |   |     |     |     |     |

\*Modified by Shell Oil Company

## SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

ACGIH TWA = 100 ppm (skin)

EFFECTS OF OVEREXPOSURE

Anesthesia - headache, nausea, dizziness, etc. Liquid moderately irritating to skin and eyes. Irritant to upper respiratory system.

EMERGENCY AND FIRST AID PROCEDURES

Remove victim and restore breathing if required. Remove from skin with soap and water. Flush eyes with water for 15 minutes. Get medical attention if irritation persists.

## SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

STABLE

CONDITIONS TO AVOID

X

INCOMPATIBILITY (Materials to avoid)

Not applicable

HAZARDOUS DECOMPOSITION PRODUCTS

CO, CO<sub>2</sub> when combusted.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

CONDITIONS TO AVOID

X

## SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate all ignition sources. Wear self-contained respirator. Large spills-dike and remove liquid by vacuum truck or by pumping into salvage vessels. Small spills-soak up with adsorbent such as rags or clay and place in sealed container. Can create explosion hazard in sewers - Notify authorities.

WASTE DISPOSAL METHOD

Reclaim solvent. Burn in approved incinerator. Bury in approved dump.

## SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

NIOSH approved respiratory equipment.

VENTILATION

LOCAL EXHAUST

Desirable

SPECIAL

MECHANICAL (General)

With approved Class D explosion-proof motors and switches.

PROTECTIVE GLOVES

Rubber gloves if direct skin contact is expected.

EYE PROTECTION

Conventional eye cover to guard against unexpected splashing.

## SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid open flames and spark sources. Avoid splash-filling. Provide adequate ventilation. Avoid excessive heat.

DO NOT BREATHE VAPOR.

Shell Oil Company

Product Safety & Compliance

Oil & Chemical Products

DATE November, 1978

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VEHICLE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VEHICLE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL, EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDOR ASSUMES THE RISK IN THE USE OF THE MATERIAL.

JS 034278

MKIL06741

**Shell**

# MATERIAL SAFETY DATA SHEET

97002 (1-81)

MSDS NUMBER ▶ 5,390-3

PAGE 1 OF 4

| SECTION I            |                     | NAME            |         |
|----------------------|---------------------|-----------------|---------|
| PRODUCT ▶            | Methyl Ethyl Ketone |                 |         |
| CHEMICAL/ SYNONYMS ▶ | MEK, 2-butanone     |                 |         |
| CHEMICAL FAMILY ▶    | Ketone              |                 |         |
| SHELL CODE ▶         | 31210               | C.A.S. NUMBER ▶ | 78-93-3 |

| 24 HOUR EMERGENCY ASSISTANCE |              |            |   |
|------------------------------|--------------|------------|---|
| SHELL                        | 713-475-9461 | HEALTH     | 1 |
| CHEMTREC                     | 800-424-9300 |            |   |
| HAZARD RATING                |              | FIRE       | 3 |
| LEAST<br>0                   | SLIGHT<br>1  |            |   |
| MODERATE<br>2                | HIGH<br>3    | REACTIVITY | 0 |
|                              | EXTREME<br>4 |            |   |

| SECTION II          |     | INGREDIENTS   |
|---------------------|-----|---|
| COMPOSITION         | %   | TOXICITY DATA   |
| Methyl Ethyl Ketone | 100 | Oral LD <sub>50</sub> (rat) = 3.3g/kg<br>Dermal LD <sub>50</sub> (rabbit) = >8ml/kg<br>Inhalation LC <sub>50</sub> (rat) =<br>>2,000ppm/2 hours |

| SECTION III  | HEALTH INFORMATION |
|--|--------------------|
| <p><u>Eye Contact:</u> liquid is highly irritating to the eyes; vapors are also irritating.</p> <p><u>Skin Contact:</u> liquid is moderately irritating to the skin. Repeated, prolonged contact can result in defatting and drying of the skin which may lead to dermatitis.</p> <p><u>Inhalation:</u> breathing high vapor concentrations or prolonged breathing of lower concentrations can cause nose and throat irritation and may cause headache, dizziness and loss of consciousness.</p> <p><u>Note:</u> Minor embryotoxic/fetotoxic effects have been observed in laboratory rats exposed to over 1000 ppm of MEK for most of the gestation period by the inhalation route (5X the OSHA-PEL/TWA).</p> |                    |

| SECTION IV   | OCCUPATIONAL EXPOSURE LIMITS |
|--|------------------------------|
| ACGIH-TLV/TWA = 200 ppm<br>-TLV/STEL = 300 ppm<br>OSHA-PEL/TWA = 200 ppm |                              |
| MK096167   |                              |

MKIL192809



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,390-3  
PAGE 2 OF 4

97003 (1-81)

**SECTION V****EMERGENCY AND FIRST AID PROCEDURES**

**EYE CONTACT:** Flush with water for 15 minutes while holding eyelids open. Get medical attention.

**SKIN CONTACT:** Wash with soap and water. Remove contaminated clothing and shoes; do not reuse until cleaned. If persistent irritation occurs, get medical attention.

**INHALATION:** Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

**INGESTION:** Do not give liquids if victim is unconscious or very drowsy. Otherwise, give no more than 2 glasses of water and induce vomiting by giving 30cc (2 tablespoons) Syrup of Ipecac. If Ipecac is unavailable, give 2 glasses of water and induce vomiting by touching finger to back of victim's throat. Keep victim's head below hips while vomiting. Get medical attention.

**SECTION VI****PHYSICAL DATA**

|  |   |                                       |
|--|---|---------------------------------------|
| BOILING POINT<br>(°F) ▶ 175                                | MELTING POINT<br>(°F) ▶ -125                | VAPOR<br>PRESSURE ▶ 75@68°F<br>(mmHg) |
| SPECIFIC<br>GRAVITY<br>(H <sub>2</sub> O=1) ▶ 0.81@60/60°F | % VOLATILE BY<br>VOLUME ▶ 100               | VAPOR<br>DENSITY ▶ 2.5<br>(AIR=1)     |
| SOLUBILITY IN<br>WATER ▶ Appreciable                       | EVAPORATION RATE<br>(BUTYL ACETATE=1) ▶ 3.8 |                                       |

**APPEARANCE AND ODOR**

Colorless, mobile liquid. Pungent odor.

**SECTION VII****FIRE AND EXPLOSION HAZARDS**

|                             |                                   |       |       |
|-----------------------------|-----------------------------------|-------|-------|
| FLASH POINT AND METHOD USED | FLAMMABLE LIMITS: % VOLUME IN AIR | LOWER | UPPER |
| 23°F (TCC)                  |                                   | 1.8   | 11.5  |

**EXTINGUISHING MEDIA**Use water fog, "alcohol" foam, dry chemical or CO<sub>2</sub>.**SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS**

Evacuate hazard area of unprotected personnel. Wear proper protective clothing including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

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MK096168

MKIL192810



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,390-3  
PAGE 3 OF 4

97004 (10-79)

**SECTION VIII****REACTIVITY**STABILITY ▶ ☐ UNSTABLE ☒ STABLEHAZARDOUS POLYMERIZATION ▶ ☐ MAY OCCUR ☒ WILL NOT OCCUR**CONDITIONS AND MATERIALS TO AVOID**

Avoid heat, sparks, open flame and contact with strong oxidizing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS**

Carbon monoxide and unidentified organic compounds may be formed during combustion.

**SECTION IX****EMPLOYEE PROTECTION****RESPIRATORY PROTECTION**

If exposure may or does exceed occupational exposure limits (Sec.IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

**PROTECTIVE CLOTHING**

Wear impervious gloves and protective clothing as required to prevent skin contact. Wear chemical goggles to prevent eye contact.

**ADDITIONAL PROTECTIVE MEASURES**

Use explosion-proof ventilation as required to control vapor concentrations.

**SECTION X****ENVIRONMENTAL PROTECTION****SPILL OR LEAK PROCEDURES**

**WARNING.** Flammable. Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking.

**Large spills:** Evacuate the hazard area of unprotected personnel. Wear appropriate respirator and protective clothing. Shut off source of leak only if safe to do so. Dike and contain. If vapor cloud forms, water fog may be used to suppress; contain run-off. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; place in non-leaking containers for proper disposal. Flush area with water to remove trace residue; dispose of flush solutions as above.

**Small spills:** take up with an absorbent material and place in non-leaking containers; seal tightly for proper disposal.

**WASTE DISPOSAL**

Place in a disposal facility approved under RCRA regulations for hazardous waste (See Sec. XIII). Use non-leaking containers, seal tightly and label properly.

**ENVIRONMENTAL HAZARDS**

MK096169

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# MATERIAL SAFETY DATA SHEET

97005 (11-81)

MSDS NUMBER

5,390-3  
PAGE 4 OF 4

## SECTION XI

## SPECIAL PRECAUTIONS

**WARNING.** Flammable Liquid.

Keep away from heat, sparks and open flames. Keep containers tightly closed. Store away from strong oxidizing agents in a cool, dry place with adequate explosion-proof ventilation. Ground equipment to prevent accumulation of static charge. If pouring or transferring materials, containers must be bonded and grounded.

Do NOT weld, heat or drill on or near container; even emptied containers can contain explosive vapors.

Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse.

## SECTION XII

## TRANSPORTATION REQUIREMENTS

|  |  |   |  |  |
|--|--|---|--|--|
| DEPARTMENT<br>OF<br>TRANSPORTATION<br>CLASSIFICATION | <input checked="" type="checkbox"/> FLAMMABLE LIQUID | <input type="checkbox"/> COMBUSTIBLE LIQUID | <input type="checkbox"/> OXIDIZING MATERIAL  | <input type="checkbox"/> NON-FLAMMABLE GAS                   |
|  | <input type="checkbox"/> FLAMMABLE SOLID             | <input type="checkbox"/> POISON, CLASS A    | <input type="checkbox"/> CORROSIVE MATERIAL  | <input type="checkbox"/> NOT HAZARDOUS BY D.O.T. REGULATIONS |
|  | <input type="checkbox"/> FLAMMABLE GAS               | <input type="checkbox"/> POISON, CLASS B    | <input type="checkbox"/> IRRITATING MATERIAL | <input type="checkbox"/> OTHER—Specify below                 |

D.O.T. PROPER SHIPPING NAME

Methyl Ethyl Ketone

OTHER REQUIREMENTS

D.O.T. ID.# = UN1193. Guide Sheet 26.

## SECTION XIII

## OTHER REGULATORY CONTROLS

EPA, FDA, OSHA, USDA, CPSC, etc.

EPA - Resource Conservation and Recovery Act (RCRA) Regulations  
This product has been designated by the EPA (RCRA 40 CFR 261.33) as a hazardous waste if it is spilled, discarded or intended to be discarded as is. The EPA hazardous waste number for methyl ethyl ketone is U159.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

Come to  
Shell for answers



MK096170

*James J. Bowen*  
Manager

SHELL OIL COMPANY  
PRODUCT SAFETY AND COMPLIANCE  
OIL AND CHEMICAL PRODUCTS  
P.O. BOX 4320  
HOUSTON, TEXAS 77210

DATE PREPARED

March 16, 1982

MKIL192812

# MATERIAL SAFETY DATA SHEET

## SECTION I

CHEMICAL NAME: Cobalt sulfate, heptahydrate  
PRODUCT NAME: Cobalt sulfate  
MANUFACTURERS NAME: The Shepherd Chemical Company  
ADDRESS: 4900 Beech Street, Cincinnati, Ohio 45212  
EMERGENCY TELEPHONE NO.: (513) 731-1110 DATE PREPARED: October 1985

## SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

### HAZARDOUS COMPONENTS

| (SPECIFIC CHEMICAL IDENTITY;<br>COMMON NAME) | OSHA PEL<br>(mg/M3) | ACGIH TLV<br>(mg/M3) | C. A. S. NO. | % |
|--|---------------------|----------------------|--------------|---|
| Cobalt sulfate                               | 0.1                 | 0.05X                | 10124-43-3   |   |

\* Recommended

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

|                        |                            |                           |               |
|------------------------|----------------------------|---------------------------|---------------|
| BOILING POINT:         | N/A                        | SPECIFIC GRAVITY (H2O=1): | 1.95          |
| VAPOR PRESSURE (mmHG): | N/A                        | MELTING POINT:            | 420 C (-7H2O) |
| VAPOR DENSITY (AIR=1): | N/A                        | EVAPORATION RATE          |               |
| SOLUBILITY IN WATER:   | soluble                    | (BUTYL ACETATE=1):        | N/A           |
| APPEARANCE AND ODOR:   | Red-pink crystals, no odor |                           |               |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD): N/A FLAMMABLE LIMITS: LEL N/A UEL N/A  
EXTINGUISHING MEDIA: Water  
SPECIAL FIREFIGHTING PROCEDURES: N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A

## SECTION V - REACTIVITY DATA

STABILITY: STABLE: X UNSTABLE: CONDITIONS TO AVOID: N/A  
INCOMPATIBILITY (MATERIALS TO AVOID): N/A  
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: N/A

HAZARDOUS POLYMERIZATION: MAY OCCUR: WILL NOT OCCUR: X  
CONDITIONS TO AVOID: N/A

JS 031336

MKIL05208

## SECTION VI - HEALTH HAZARD DATA

PRODUCT: Cobalt sulfate

TOXICITY: None found

ROUTE(S) OF ENTRY: INHALATION: X SKIN: X INGESTION:

CARCINOGENICITY: NTP: NO IARC MONOGRAPHS: NO OSHA REGULATED: NO

HEALTH HAZARDS (ACUTE & CHRONIC)/SIGNS AND SYMPTOMS OF EXPOSURE:

This product causes eye irritation and may cause skin and upper respiratory tract irritation.

Overexposure to cobalt compounds may cause nose and throat irritation and an allergic skin rash. They are mildly irritating to the eyes and if ingested, may cause vomiting, diarrhea and a sensation of hotness.

Excessive inhalation and/or ingestion of cobalt salts may affect the kidneys, lungs and thyroid.

### MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Respiratory system conditions and skin diseases

### EMERGENCY AND FIRST AID PROCEDURES:

If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth.

If breathing is difficult, give oxygen. Call a physician. If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Call a physician. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

## SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area of spill. Collect material into appropriate containers for reuse or disposal. Material may also be flushed with water to a wastewater treatment system.

### WASTE DISPOSAL METHOD:

Dispose in closed containers, at an approved landfill, in accordance with local, state and federal regulations. Material may also be flushed with water to a wastewater treatment system.

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Keep in closed containers. Avoid generating dust.

### OTHER PRECAUTIONS:

Avoid contact with eyes, skin and clothing. Avoid breathing dust. Wash thoroughly after handling.

## SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: NIOSH/MSHA approved for dust.

VENTILATION: Sufficient to maintain OSHA PEL

PROTECTIVE GLOVES: Impervious

EYE PROTECTION: Side shield safety glasses or goggles

OTHER PROTECTIVE CLOTHING AND EQUIPMENT: Safety showers and eyewashes.

WORK/HYGIENIC PRACTICES: Good housekeeping procedures should be followed to minimize dust.

## SECTION IX - REFERENCES

Occupational Health Guidelines for Chemical Hazards, JAN. 1981, NIOSH/OSHA  
Occupational Diseases - A Guide to their Recognition, JUNE 1977, NIOSH  
Criteria for Controlling Occupational Exposure to Cobalt, OCT. 1981, NIOSH

ALTHOUGH THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN (HEREINAFTER "INFORMATION") ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE CORRECT AS OF THE DATE HEREOF, THE SHEPHERD CHEMICAL COMPANY MAKES NO REPRESENTATIONS AS TO THE COMPLETENESS OR ACCURACY THEREOF. INFORMATION IS SUPPLIED UPON THE CONDITION THAT THE PERSONS RECEIVING SAME WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR PURPOSES PRIOR TO USE. IN NO EVENT WILL THE SHEPHERD CHEMICAL COMPANY BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON INFORMATION. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

JS 031337

MKIL05209

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|   |  |  |
|---|--|--|
| MANUFACTURER'S NAME<br><b>THE STANLEY WORKS</b>   |  | EMERGENCY TELEPHONE NO.<br><b>(203) 225-5111 Ext. S375</b> |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br><b>195 LAKE STREET NEW BRITAIN, CT 06050</b> |  |  |
| CHEMICAL NAME AND SYNONYMS<br><b>FERROUS SULFATE</b>  | TRADE NAME AND SYNONYMS<br><b>COPPERAS</b>           |  |
| CHEMICAL FAMILY<br><b>METAL SALT</b>  | FORMULA<br><b>FeSO<sub>4</sub> · 7H<sub>2</sub>O</b> |  |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | %    | TLV (Units) | ALLOYS AND METALLIC COATINGS           | %    | TLV (Units) |
|---|------|-------------|--|------|-------------|
| PIGMENTS  | n.a. |             | BASE METAL                             | n.a. |             |
| CATALYST  | n.a. |             | ALLOYS                                 | n.a. |             |
| VEHICLE   | n.a. |             | METALLIC COATINGS                      | n.a. |             |
| SOLVENTS  | n.a. |             | FILLER METAL PLUS COATING OR CORE FLUX | n.a. |             |
| ADDITIVES   | n.a. |             | OTHERS                                 | n.a. |             |
| OTHERS  | n.a. |             |  |      |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |      |             |  | %    | TLV (Units) |
|   |      |             |  | n.a. |             |
|   |      |             |  |      |             |
|   |      |             |  |      |             |
|   |      |             |  |      |             |

## SECTION III - PHYSICAL DATA

|                         |                                      |                                       |      |
|-------------------------|--------------------------------------|---------------------------------------|------|
| BOILING POINT (°F.)     | n.a.                                 | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | 1.89 |
| VAPOR PRESSURE (mm Hg.) | n.a.                                 | PERCENT VOLATILE BY VOLUME (%)        | n.a. |
| VAPOR DENSITY (AIR=1)   | n.a.                                 | EVAPORATION RATE (_____ =1)           | n.a. |
| SOLUBILITY IN WATER     | Appreciable                          |                                       |      |
| APPEARANCE AND ODOR     | BLUE-GREEN POWDER, SLIGHT ACRID ODOR |                                       |      |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|   |                                 |     |     |
|---|---------------------------------|-----|-----|
| FLASH POINT (Method used)<br><b>NOT FLAMMABLE</b> | FLAMMABLE LIMITS<br><b>n.a.</b> | Lel | Uel |
| EXTINGUISHING MEDIA<br><b>n.a.</b>                |                                 |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES<br><b>n.a.</b>   |                                 |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br><b>none</b> |                                 |     |     |
| <b>MK095996</b>                                   |                                 |     |     |

|                                    |   |
|------------------------------------|---|
| PERMITTED LIMIT VALUE              | UNKNOWN   |
| EFFECTS OF OVEREXPOSURE            | CAN CAUSE EYE AND SKIN IRRITATION.  |
| EMERGENCY AND FIRST AID PROCEDURES | FOR SKIN IRRITATION - WASH WITH PLENTY OF WATER, SEE DOCTOR<br>FOR EYE CONTACT - FLUSH WITH WATER FOR 15 MINUTES, SEE EYE DOCTOR. |

| SECTION VI - REACTIVITY DATA                                       |                |   |                             |
|--|----------------|---|-----------------------------|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID<br>n.a. |
|  | STABLE         | X |                             |
| INCOMPATIBILITY (Materials to avoid)<br>STRONG OXIDIZING MATERIALS |                |   |                             |
| HAZARDOUS DECOMPOSITION PRODUCTS                                   |                |   |                             |
| HAZARDOUS<br>POLYMERIZATION  | MAY OCCUR      |   | CONDITIONS TO AVOID<br>n.a. |
|  | WILL NOT OCCUR | X |                             |

| SECTION VII - SPILL OR LEAK PROCEDURES  |  |
|---|--|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED<br>AVOID BREATHING DUST               |  |
| WASTE DISPOSAL METHOD<br>FLUSH WITH WATER DISPOSAL SHOULD COMPLY WITH ENVIRONMENTAL REGULATIONS |  |

| SECTION VIII - SPECIAL PROTECTION INFORMATION                             |                      |                                |                 |
|---|----------------------|--------------------------------|-----------------|
| RESPIRATORY PROTECTION (Specify type)<br>WEAR A NUISANCE TYPE RESPIRATOR. |                      |                                |                 |
| VENTILATION   | LOCAL EXHAUST        |                                | SPECIAL<br>n.a. |
|   | MECHANICAL (General) | n.a.                           | OTHER<br>n.a.   |
| PROTECTIVE GLOVES<br>RECOMMENDED  |                      | EYE PROTECTION<br>YES, GOGGLES |                 |
| OTHER PROTECTIVE EQUIPMENT<br>n.a.  |                      |                                |                 |

| SECTION IX - SPECIAL PRECAUTIONS                        |  |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING<br>n.a. |  |
| OTHER PRECAUTIONS<br>n.a.                               |  |

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GPO 9-30-540

MK095997

Form OSHA-20  
Rev. May 72

Prepared by: TECHNICAL CENTER

Company: STANLEY STEEL

Title: John W. [Signature]  
Supv. Eng.

Date: 6-21-82

MKIL192700

# Product Safety Information

## DIAMMONIUM PHOSPHATE

This Product Safety Information Sheet is principally directed to managerial, safety, hygiene and medical personnel. The description of physical, chemical and toxicological properties and handling advice is based on experimental results and past experience. It is intended as a starting point for the development of health and safety procedures.

This Product Safety Information Sheet meets the material safety data sheet (MSDS) requirements of the federal OSHA Hazard Communication standard (29 CFR 1910.1200).

### SYNONYMS:

Ammonium phosphate, secondary; Diammonium hydrogen phosphate; Dibasic ammonium phosphate.

CAS REGISTRY NUMBER: 7783-28-0

### CAS INDEX NAME:

Phosphoric acid, diammonium salt (8CI9CI)

### I. PHYSICAL AND CHEMICAL PROPERTIES

FORMULA:  $(\text{NH}_4)_2\text{HPO}_4$

FORMULA WEIGHT: 132.06

### PHYSICAL STATE/DESCRIPTION:

White granular or powdered solid, hygroscopic

### BULK DENSITY:

Granular: approx. 50 lb/ft<sup>3</sup> Powder: approx. 38 lb/ft<sup>3</sup>

### DECOMPOSITION TEMPERATURE:

311°F ( 155°C)

ODOR: Faint ammonia-like

pH: 8.0 (1% aqueous solution)

### SOLUBILITY:

41 g/100 g in H<sub>2</sub>O at 77°F (25°C) (granular only) Practically insoluble in alcohol, acetone (Merck, 1983)

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IN CASE OF SUSPECTED POISONING, REFER TO THE INFORMATION IN SECTION VII: HUMAN HEALTH AND THE PROCEDURE AND EMERGENCY CONTACTS IN SECTION VIII: FIRST AID.

IN CASE OF SPILLAGE, REFER TO THE PROCEDURE AND EMERGENCY CONTACTS IN SECTION X: SPILL HANDLING OR CALL CHEMTREC 800-424-9300.

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### II. CHEMICAL REACTIVITY

This material is a slightly alkaline salt and undergoes typical reactions of alkaline salts. It will react with alkali to liberate ammonia.

JS 031350

Stauffer believes all information given herein is accurate. It is offered in good faith, but supplied without consideration or guarantee. Stauffer assumes no obligation or liability for the accuracy or sufficiency of the information given, all such information being given or accepted at user's risk.



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Westport, Connecticut 06881

MKIL05222

### III. STABILITY

This material decomposes upon heating to form ammonia and polyphosphoric acid. It is stable at ambient temperatures and atmospheric pressure. The product will absorb moisture when exposed to air.

### IV. FIRE HAZARD

This material will not support combustion. However, under fire conditions it may decompose to give off ammonia and other toxic fumes.

### V. FIREFIGHTING TECHNIQUE

As in any fire, prevent human exposure to fire, smoke, fumes or products of decomposition. Evacuate nonessential personnel from the fire area. Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing.

Use standard firefighting techniques to extinguish fires involving this material -- use water spray, dry chemicals or carbon dioxide.

### VI. TOXICOLOGY

#### INGESTION

The acute oral LD50 is greater than 1000 mg/kg in male rats. A single oral dose of 1000 mg/kg did not produce signs of toxicity in male rats.

#### SKIN CONTACT

Mild skin irritant to rabbits following a 4-hour exposure.

T-4054

### VII. HUMAN HEALTH

The principal routes of exposure are skin contact and inhalation. Ingestion of large quantities may cause symptoms of nonspecific irritation of the gastrointestinal tract. Contact with the skin or eyes may produce irritation.

Inhalation of high concentrations of dust may produce nonspecific irritation of the upper respiratory tract.

There are no data available which address medical conditions that are generally recognized as being aggravated by exposure to this product. (Reader should consult SECTION VI: TOXICOLOGY for effects observed in experimental animals under controlled laboratory conditions using this product.)

### VIII. FIRST AID

#### CALL A POISON CENTER OR A PHYSICIAN IMMEDIATELY

If a known exposure occurs or is suspected, immediately start the recommended procedures below. Simultaneously contact a Poison Center, a physician or the nearest hospital. Inform the person contacted of the type and extent of exposure, describe the victim's symptoms, and follow the advice given.

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FOR ADDITIONAL MEDICAL OR  
TOXICOLOGICAL INFORMATION,  
CALL COLLECT, DAY OR NIGHT,  
STAUFFER CHEMICAL COMPANY,  
(203) 226-6602 OR CHEMTREC  
800-424-9300

---

#### INGESTION

If swallowed, immediately give several glasses of water and induce vomiting by gagging the victim with a finger placed on the back of the victim's tongue. Give fluids until vomitus is clear. If victim is unconscious or convulsing, do not induce vomiting or give anything by mouth.

#### SKIN CONTACT

Flush all affected areas with large amounts of water for 15 minutes while removing any contaminated clothing and shoes. Get medical attention if skin irritation occurs. Wash clothing before re-use.

## DIAMMONIUM PHOSPHATE

### EYE CONTACT

Flush the eyes with plenty of running water for at least 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Seek medical attention if eye irritation occurs.

### INHALATION

If inhaled, remove to fresh air. If breathing becomes difficult, oxygen may be given, preferably with a physician's advice. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

### IX. INDUSTRIAL HYGIENE

The recommendations described in this section are provided as general guidance for minimizing exposure when handling this product. Because use conditions will vary depending upon customer applications, specific safe handling procedures should be developed by a person knowledgeable of the intended use conditions and equipment. During the development of safe handling procedures, consideration should be given to the need for cleaning of equipment and piping systems to render them nonhazardous before maintenance and repair activities are performed. Waste resulting from these procedures should be handled in accordance with SECTION XIII: DISPOSAL OF MATERIAL.

### ENGINEERING CONTROLS

In those cases where engineering controls are indicated by the use conditions, the following traditional exposure control techniques may be used to effectively minimize employee exposure: local exhaust ventilation, enclosed system design, or process isolation and remote control, in combination with appropriate use of personal protective equipment.

Available data do not suggest that exposure to this substance is harmful.

If prolonged or repeated exposure through skin contact, eye contact, or inhalation cause irritation, use gloves, long-sleeved clothing, chemical goggles, and/or NIOSH-approved dust respirators to minimize exposure.

### EXPOSURE LIMITS

No exposure limits have been established for this product.

### X. SPILL HANDLING

Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices (refer to SECTION IX: INDUSTRIAL HYGIENE).

Any person entering either a significant spill area or an unknown concentration of a dust should use a NIOSH-approved dust respirator.

Small spills can be handled routinely. Use adequate ventilation and/or wear a NIOSH-approved dust respirator to prevent inhalation exposure. Wear protective clothing to prevent skin and eye contact. Use the following procedures:

Sweep up spilled material being careful not to create dust. Place sweepings in a chemical waste container for disposal (refer to SECTION XIII: DISPOSAL OF MATERIAL). Flush with water being careful not to contaminate waters by disposal of flushings.

---

IN CASE OF SPILL EMERGENCY,  
DAY OR NIGHT, CALL CHEMTREC  
800-424-9300.

---

## DIAMMONIUM PHOSPHATE

### XI. CORROSIVITY TO MATERIALS OF CONSTRUCTION

This material is not corrosive to materials commonly used in the construction of process equipment, storage and shipping containers. Aqueous solutions are mildly corrosive to cast iron and aluminum. Suitable non-metallic materials of construction include fiberglass, polypropylene and polyvinyl chloride.

### XII. STORAGE REQUIREMENTS

This material is hygroscopic and tends to cake on storage. When not in use, containers should be kept closed at all times. Containers should be stored in a cool, dry, well ventilated area away from flammable materials and sources of heat or flame. Store away from foodstuffs or animal feed. Exercise due caution to prevent damage to or leakage from the container.

### XIII. DISPOSAL OF MATERIAL

Material that cannot be used or chemically reprocessed should be disposed of at an approved facility in accordance with any applicable regulations under the Resource Conservation and Recovery Act. NOTE: State and local regulations may be more stringent than federal.

### XIV. DISPOSAL OF CONTAINER

Dispose of empty containers according to any applicable regulations under the Resource Conservation and Recovery Act. NOTE: State and local regulations may be more stringent than federal.

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FOR NONEMERGENCY HANDLING  
INFORMATION, CONTACT THE  
BASIC CHEMICALS DIVISION,  
STAUFFER CHEMICAL COMPANY,  
WESTPORT, CT 06881 OR PHONE  
(203) 222-3000.

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New Issue 9/85  
Supersedes Issue Dated 9/80  
DIA.257.B

### REFERENCES CITED

National Institute for Occupational Safety and  
TOXIC EFFECTS OF CHEMICAL SUBSTANCES

Merck & Company, Inc. (1983). THE MERCK  
DRUGS AND BIOLOGICALS, 10th Edition. Mer

# Product Safety Information

## SODIUM SULFITE, ANHYDROUS

This Product Safety Information Sheet is principally directed to managerial, safety, hygiene and medical personnel. The description of physical, chemical and toxicological properties and handling advice is based on experimental results and past experience. It is intended as a starting point for the development of safety and health procedures.

### I. PHYSICAL AND CHEMICAL PROPERTIES

Formula:  $\text{Na}_2\text{SO}_3$   
Formula Weight: 126.06  
Physical State: White, granular solid  
Bulk Density: (approx.) 74 lbs/ft<sup>3</sup>  
Melting Point: Decomposes at 302°F/150°C  
Solubility: 27g/100g  $\text{H}_2\text{O}$  at 68°F/20°C  
Odor: None  
pH: 9.6 to 9.8 (1% aqueous solution)

### II. CHEMICAL REACTIVITY

This material releases sulfur dioxide upon contact with mineral acids. It reacts with oxygen or oxidizing agents in moist state or solution.

### III. STABILITY

This material is stable at ambient environmental temperatures and atmospheric pressure.

### IV. FIRE HAZARD

This material is considered noncombustible. However, under fire conditions it may decompose to give off sulfur dioxide.

### V. FIREFIGHTING TECHNIQUE

As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate nonessential personnel from the fire area.

Because of possible decomposition to sulfur dioxide under fire conditions, firefighters should wear full-face, self-contained breathing apparatus and impervious clothing such as gloves, hoods, suits and rubber boots.

Use standard firefighting techniques in extinguishing fires involving this product—use water, dry chemicals, foam, carbon dioxide or other suitable suffocation agents.

### VI. TOXICOLOGY

CAUTION: May cause irritation.

### Ingestion

The acute oral LD50 is greater than 1000 mg/kg in male rats. A single oral dose of 1000 mg/kg did not produce signs of toxicity in male rats.

### Skin Contact

Moderate irritant to rabbit skin following a 24-hour exposure.

### Threshold Limit Value (TLV)

The American Conference of Governmental Industrial Hygienists has not established a TLV.

T-1861, T-4054 TAP(7): 559-565 (1965)

### VII. FIRST AID

#### CALL A PHYSICIAN IMMEDIATELY

If a known exposure occurs or is suspected, immediately initiate the recommended procedures below. Simultaneously contact a physician, or the nearest hospital, or the nearest Poison Control Center. Inform the person contacted of the type and extent of exposure, describe the victim's symptoms, and follow the advice given. For additional information call collect, day or night, Stauffer Chemical Company (203) 226-6602 or Chemtrec (800) 424-9300.

#### Ingestion

If swallowed—Immediately dilute the swallowed material by giving large quantities of water. Induce vomiting by gagging the victim with a blunt object placed on the back of the victim's tongue. Continue fluid administration until vomitus is clear. Never give anything by mouth to an unconscious person. Call a physician or the nearest Poison Control Center immediately.

#### Skin Contact

Immediately flush all affected areas with large amounts of water for at least 15 minutes while removing any contaminated clothing. Do not attempt to neutralize with chemical agents. Obtain medical advice immediately.

#### Eye Contact

Immediately flush the eyes with large quantities of running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Do not attempt

In case of suspected exposure, refer to the procedure and emergency contacts in Section VII—FIRST AID.

In case of spillage, refer to the procedure and emergency contacts in Section IX—SPILL HANDLING.

In case of suspected animal poisoning, call a veterinarian or call collect, day or night (203) 226-6602 (Stauffer Chemical Company) or (800) 424-9300 (CHEMTREC).

In case of contamination with other materials, call (800) 424-9300 (CHEMTREC).

All information is offered in good faith without guarantee or obligation for the accuracy or sufficiency thereof, or the results obtained, and is accepted at user's risk. The uses referred to are for the purpose of illustration only; user should investigate and establish the suitability of such use(s) in every case. Nothing herein shall be construed as a recommendation for uses which infringe valid patents or as extending license under valid patents.

B-11433 (9/80) Printed in U.S.A.



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JS 030661

MKIL05053

to neutralize with chemical agents. Obtain medical attention as soon as possible. Oils or ointments should not be used. Continue the flushing for an additional 15 minutes if the physician is not immediately available.

**Inhalation**

Remove from contaminated atmosphere. Seek medical attention if respiratory irritation or breathing difficulty occurs. If the victim is having difficulty breathing, oxygen may be administered, preferably with a physician's advice.

**VIII. INDUSTRIAL HYGIENE**

**Ingestion**

All food should be kept in a separate area away from the storage/use location. Eating, drinking and smoking should be prohibited in areas where there is a potential for significant exposure to this material. Before eating, hands and face should be thoroughly washed.

**Skin Contact**

Skin contact with dust or its aerosol should be prevented through the use of suitable protective clothing, gloves and footwear, selected with regard for use condition exposure potential.

**Eye Contact**

Eye contact with dust or its aerosol should be avoided through the use of chemical safety glasses, goggles or a face shield, selected with regard for use condition exposure potential.

**Inhalation**

If use conditions generate airborne solid or aerosol, the material should be handled in an open (e.g. outdoor) or well-ventilated area. Where adequate ventilation is not available, NIOSH-approved respirators should be employed to reduce exposure. Respirator selection must address the potential for exposure under the use conditions.

**IX. SPILL HANDLING**

Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices (refer to Section VIII).

Spills can be handled routinely using the following procedures:

Sweep up the spilled material being careful not to create dust. Place sweepings into an appropriate chemical waste container. Seal container and dispose of in an approved landfill or in a manner that will not adversely affect the environment. Flush spill area with detergent and water to remove any residue.

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IN CASE OF EMERGENCY, CALL, DAY OR NIGHT  
(800) 424-9300 (CHEMTREC)

---

**X. CORROSIVITY TO MATERIALS OF CONSTRUCTION**

This material is not corrosive to materials commonly used in the construction of process equipment, storage and shipping containers.

**XI. STORAGE REQUIREMENTS**

Containers should be stored in a cool, dry, well-ventilated area. Exercise due caution to prevent damage to or leakage from the container.

**XII. DISPOSAL OF UNUSED MATERIAL**

Material that cannot be used or chemically reprocessed should be disposed of in an approved landfill or in a manner that will not adversely affect the environment.

**XIII. DISPOSAL OF CONTAINER**

Empty containers may be discarded with the general trash or incinerated by means which provide appropriate environmental pollution controls.

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# STEUBER COMPANY

INCORPORATED



66 FIELD POINT ROAD · GREENWICH, CT 06830

In case of EMERGENCY Phone 800/882-8844 or ..... TELEPHONE (203) 681-1600 CABLE STEUBERCO  
 CALL CHEMTREC - Day or Night -  
 800/424-9300 (Toll Free)  
 In Washington, D.C. 483-7616  
 Outside Continental USA 202/483-7616

TELEX: INT. 221964 SCI UR DOM. 643933 SCI ORC

## MATERIAL SAFETY DATA SHEET

### Methylene Chloride

#### SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: **METHYLENE CHLORIDE**

OTHER DESIGNATIONS: Dichloromethane, Methane Dichloride,  $\text{CH}_2\text{Cl}_2$  ASTM D3506, CAS# 000 075 092

MANUFACTURER: Available from several suppliers.

#### SECTION II. INGREDIENTS AND HAZARDS

Methylene Chloride

\*ACGIH (1978) Intended changes list has dropped TLV from 200 ppm to 100 ppm. Current OSHA TLV remains at 500 ppm.

NIOSH has proposed a 75 ppm 10 hr-TWA with a ceiling concentration of 500 ppm. (15 minute sampling period) NIOSH also warns that toxic hazards with  $\text{CH}_2\text{Cl}_2$  are increased by the presence of alcohol and/or carbon monoxide and by heavy labor and smoking.

%

Cs 100

#### HAZARD DATA

8-hr TWA 100 ppm\*

Human, inhalation  
 TCLo 500 ppm/8-hr  
 (blood effects)

Ret. oral LD<sub>50</sub>  
 2136 mg/kg

#### SECTION III. PHYSICAL DATA

Boiling point, 1 atm deg F (C) ..... 104 (40)

Vapor pressure at 20 C, mm Hg ..... 340

Vapor density (Air=1) ..... 2.9

Water solubility, wt. % at 20 C ..... 1.6

Specific gravity, 25/25C ..... 1.32

Volatiles, % ..... ca 100

Evaporation rate ( $\text{CCl}_4=1$ ) ..... 1.47

Solidifies, deg C ..... -95

APPEARANCE & ODOR: Colorless liquid; ether-like, sweetish odor. The recognition threshold (unfatigued) is 214 ppm, 100% of test panel.

#### SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

LOWER

UPPER

None

>1033 F

Vol. % at >100C

12

This material does not give a flash or fire point by the conventional test methods. It does form weakly combustible mixtures at high temperatures and high concentrations in air; and it can burn or explode in oxygen enriched air.

Firefighters should use self-contained breathing apparatus (with eye protection) for protection from suffocating and intoxicating vapors and from high temperature decomposition products.

#### SECTION V. REACTIVITY DATA

Methylene chloride is a stable compound under normal conditions of storage and use; however, exposure to high temperatures (open flames, welding arcs, etc.) can give corrosive and toxic thermal-oxidative decomposition products such as hydrogen chloride and phosgene. It does not undergo hazardous polymerization.

Prolonged exposure to excess water may cause noticeable hydrolysis above 60 C.

Prevent contact with alkali metals and finely powdered aluminum and magnesium to avoid possible violent reactions.

(Continued on reverse side)

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| SECTION VI. HEALTH HAZARD INFORMATION  | (See Sect. II)<br>TLV 100 ppm (360 mg/m <sup>3</sup> ) |
|--|--|
| <p>ACGIH TLV for methylene chloride lowered from 200 ppm (1977); NIOSH has proposed a 10-hr TWA of 75 ppm. Present OSHA value of 500 ppm will probably be lowered. ...</p> <p>Inhalation of high concentrations causes loss of coordination and equilibrium, and, if exposure is prolonged excessively, unconsciousness and even death. Prolonged skin contact can be irritating; absorbed through the skin. Eye contact is painful and irritating, but it is not believed likely to produce serious injury. Methylene chloride metabolizes to produce carbon monoxide in the body; it increases and sustains carboxyhemoglobin levels in the blood, reducing the oxygen-carrying capacity of the blood.</p> <p><b>FIRST AID:</b></p> <p><b>EYE AND SKIN CONTACT:</b> Flush contact area with plenty of running water. If irritation persists get medical attention.</p> <p><b>INHALATION:</b> Remove to fresh air; give artificial respiration, if required. Keep quiet and warm. Get medical attention; advise physician <u>not</u> to use adrenalin.</p> <p><b>INGESTION:</b> Get prompt medical attention. (If physician unavailable, give water or milk and induce vomiting.) Advise physician <u>not</u> to use adrenalin.</p> |  |
| SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES  |  |
| <p>For small spills, soak up with an absorbent solid, such as vermiculite, avoiding breathing of vapors and using gloves to avoid contact. Evaporate off solvent in an exhaust hood or bury with absorbent in a landfill.</p> <p>When large spills occur, evacuate area; notify safety personnel; provide ventilation. Use protective equipment during clean-up, such as self-contained breathing apparatus, boots, gloves, etc. Contain and recover liquid when possible. Pick up residue with absorbent (as with small spills) or flush to ground (not to sewer) to evaporate.</p> <p>Reclaim waste solvent by filtration and distillation procedures or dispose of via a licensed, waste solvent disposal company.</p>  |  |
| SECTION VIII. SPECIAL PROTECTION INFORMATION   |  |
| <p>Use general ventilation and efficient exhaust ventilation to meet TLV requirements. Air supplied or self-contained breathing apparatus should be available for emergency use. A full facepiece is required above 750 ppm.</p> <p>Use neoprene or Viton gloves for skin protection and safety glasses. Chemical goggles or a face shield should be used where splashing is possible. An eye wash station should be readily available if splashing is probable.</p> <p><b>NOTE:</b> NIOSH indicates that carbon monoxide content and CH<sub>2</sub>Cl<sub>2</sub> content of workplace air are additive and that both must be monitored where methylene chloride exposures occur. The 10-hr TWA for CO must not exceed about 9 ppm where exposure to methylene chloride occurs unless CH<sub>2</sub>Cl<sub>2</sub> exposure is also controlled to a lower level than the TLV.</p>   |  |
| SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS   |  |
| <p>Use caution in handling this material. Avoid airborne concentration build-up. Avoid exposure to high temperature. No smoking where vapors of this material are present.</p> <p>Store in a cool, well-ventilated area away from sources of heat. Open containers with caution.</p> <p>When methylene chloride vapor are drawn into the combustion chamber of a space heater, severe corrosion damage to the heater can occur, even at levels well below TLV.</p> <p>Those with a history of cardiovascular disease or who are heavy drinkers or smokers should avoid exposure to methylene chloride.</p>   |  |

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. To the best of our knowledge, the information contained herein is accurate. However, neither STEUBER COMPANY, Incorporated nor any of its affiliates and/or suppliers assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material and whether there is any infringement of patents is the sole responsibility of the user. All chemicals may present unknown health hazards and should be used with CAUTION. Although certain hazards are described on this data sheet, we cannot guarantee that these are the only hazards which exist. Users of any chemical should satisfy themselves by independent investigation of current scientific and medical knowledge that the material can be used safely. Furthermore, users must inform all its workers, contractors, customers, etc. of all hazards to health or safety and precautions required to avoid injury to person or property, in connection with materials covered hereunder.

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# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSH-005-4)



CHEMICAL NAME CELLOSOLVE® ACETATE

SYNONYMS: Ethylene Glycol Monoethyl Ether Acetate;  
2-Ethoxyethyl Acetate; 2-Ethoxyethanol Acetate

CHEMICAL FAMILY: Esters

FORMULA:  $\text{CH}_3\text{COOC}_2\text{H}_4\text{OC}_2\text{H}_5$

MOLECULAR WEIGHT: 132.16

TRADE NAME AND SYNONYMS: CELLOSOLVE Acetate, 99%, Urethane Grade

## PHYSICAL DATA

|   |                                |   |          |
|---|--------------------------------|---|----------|
| BOILING POINT, 760 mm. Hg                     | 156.3°C. (313.3°F.)            | FREEZING POINT                            | -61.7°C. |
| SPECIFIC GRAVITY ( $\text{H}_2\text{O} = 1$ ) | 0.9748 at 20/20°C.             | VAPOR PRESSURE AT 20°C.                   | 2 mm. Hg |
| VAPOR DENSITY (air = 1)                       | 4.7                            | SOLUBILITY<br>IN WATER, % by wt. at 20°C. | 22.9     |
| PER CENT VOLATILES<br>BY VOLUME               | 100                            | EVAPORATION RATE<br>(Butyl Acetate = 1)   | 0.21     |
| APPEARANCE AND ODOR                           | Water-white liquid; mild odor. |   |          |

## II. HAZARDOUS INGREDIENTS

| MATERIAL                        | %   | TLV (Units)            |
|---------------------------------|-----|------------------------|
| 2-Ethoxyethylacetate            | 100 | 100 ppm. ACGIH<br>OSHA |
| (See Sections III through VIII) |     |                        |
|                                 |     |                        |
|                                 |     |                        |

## III. FIRE AND EXPLOSION HAZARD DATA

|                                       |  |                             |        |       |     |
|---------------------------------------|--|-----------------------------|--------|-------|-----|
| FLASH POINT<br>(test method)          | 126 °F., Tag closed cup ASTM D 56<br>134 °F., Tag open cup ASTM D 1310                   | AUTOIGNITION<br>TEMPERATURE | 715°F. |       |     |
| FLAMMABLE LIMITS IN AIR, % by volume  |  | LOWER                       | 1.8    | UPPER | 6.7 |
| EXTINGUISHING<br>MEDIA                | Use carbon dioxide or dry chemical for small fires.<br>Use alcohol foam for large fires. |                             |        |       |     |
| SPECIAL FIRE FIGHTING<br>PROCEDURES   | Application of water to burning liquid will decrease intensity of flame.                 |                             |        |       |     |
| UNUSUAL FIRE AND<br>EXPLOSION HAZARDS | None   |                             |        |       |     |

## EMERGENCY PHONE NUMBER

304/744-3487

MK00034645

This number is available days, nights, weekends, and holidays.

While Union Carbide Corporation believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which Union Carbide Corporation assumes legal responsibility. They are offered solely for your consideration, investigation, and verification.

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#### IV. HEALTH HAZARD DATA

|                                    |   |
|------------------------------------|---|
| THRESHOLD LIMIT VALUE              | 100 ppm. (Skin) — ACGIH (1975)<br>100 ppm. (Skin) — (OSHA) CFR 29 § 1000 Table G 1  |
| EFFECTS OF OVEREXPOSURE            | Breathing vapor will be irritating to nose and throat. May cause nausea and vomiting.<br>Contact with skin or eyes may be irritating. |
| EMERGENCY AND FIRST AID PROCEDURES | Remove to fresh air. Wash affected skin areas with water. Flush eyes with water.<br>Get medical care if discomfort persists.          |

#### V. REACTIVITY DATA

|                                      |   |                     |      |
|--------------------------------------|---|---------------------|------|
| STABILITY                            |   | CONDITIONS TO AVOID | None |
| UNSTABLE                             | STABLE  |                     |      |
| —                                    | ✓   |                     |      |
| INCOMPATIBILITY (materials to avoid) | Avoid contamination with strong alkalis.  |                     |      |
| HAZARDOUS DECOMPOSITION PRODUCTS     | Thermal decomposition or burning may produce carbon dioxide and/or carbon monoxide. |                     |      |
| HAZARDOUS POLYMERIZATION             |   | CONDITIONS TO AVOID | None |
| May Occur                            | Will not Occur  |                     |      |
| —                                    | ✓   |                     |      |

#### VI. SPILL OR LEAK PROCEDURES

|  |   |
|--|---|
| STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED | Small spills should be flushed with large quantities of water.<br>Larger spills should be collected for disposal. |
| WASTE DISPOSAL METHOD                                | Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.                  |

#### VII. SPECIAL PROTECTION INFORMATION

|                                       |  |                |           |
|---------------------------------------|--|----------------|-----------|
| RESPIRATORY PROTECTION (specify type) | Air-supplied mask for high concentrations. |                |           |
| VENTILATION                           | LOCAL EXHAUST                              | Preferable     | SPECIAL — |
|                                       | MECHANICAL (general)                       | Acceptable     | OTHER —   |
| PROTECTIVE GLOVES                     | Rubber gloves                              | EYE PROTECTION | Goggles   |
| OTHER PROTECTIVE EQUIPMENT            | Safety shower and eye bath                 |                |           |

#### VIII. SPECIAL PRECAUTIONS

|                                       |  |
|---------------------------------------|--|
| PRECAUTIONARY LABELING                | CELLOSOLVE ACETATE, 99% URETHANE GRADE<br>Ethylene Glycol Monoethyl Ether Acetate<br>CAUTION! COMBUSTIBLE — BREATHING OF VAPOR MAY CAUSE IRRITATION<br>Keep away from heat and open flame.<br>Keep container closed.<br>Use with adequate ventilation.<br>Avoid prolonged or repeated breathing of vapor.<br>FOR INDUSTRY USE ONLY |
| OTHER HANDLING AND STORAGE CONDITIONS | —  |

MK00034646

MKIL20999

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 02/18/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

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I. IDENTIFICATION

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PRODUCT NAME: SILWET Surface Active Copolymer L-7602  
CHEMICAL NAME: Polyalkyleneoxide modified polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA: Copolymer  
MOLECULAR WEIGHT: Copolymer  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

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II. PHYSICAL DATA (Determined on typical material)

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BOILING POINT, 760 mm Hg: >150°C (Copolymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O =1): 1.03 @ 25/25°C  
FREEZING POINT: <-29°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Dispersible  
APPEARANCE AND ODOR: Clear, slightly yellow liquid; mild odor

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

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JS 030709

MKIL05101

PRODUCT NAME: SILWET Surface Active Copolymer L-7602

## III. INGREDIENTS

| MATERIAL  | %     | TLV (Units)      | Hazard        |
|---|-------|------------------|---------------|
| Polyalkyleneoxide<br>modified polydimethyl-<br>siloxane | >99   | None Established | See Section V |
| Toluene   | <0.75 | 100 ppm          | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
260°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use water spray, carbon dioxide, dry chemical, alcohol-type or universal-type foams applied by manufacturer's recommended technique.

## SPECIAL FIRE FIGHTING PROCEDURES:

Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

Toluene 100 ppm ACGIH 1984-85

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

May cause temporary local reddening of skin.

JS 030710

MKIL05102

PRODUCT NAME: SILWET Surface Active Copolymer L-7602

EYE CONTACT:

No evidence of adverse effects from available information.

EFFECTS OF REPEATED OVEREXPOSURE:

Prolonged or repeated overexposure to mist or vapors generated at high temperatures may result in the inhalation of harmful amounts of material.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

Remove to fresh air.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

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VI. REACTIVITY DATA

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STABILITY:       Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION:   Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030711

MKIL05103

PRODUCT NAME: SILWET Surface Active Copolymer L-7602

#### VII. SPILL OR LEAK PROCEDURES

##### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Collect for disposal.

##### WASTE DISPOSAL METHOD:

Incinerate in a furnace or bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

##### RESPIRATORY PROTECTION (specify type):

None required in normal use.

##### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

##### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

##### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

##### OTHER PRECAUTIONS:

None.

##### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/24/86

Revision Date: 02/18/86

FILE NUMBER: S00394

Printed in USA

JS 030712

MKIL05104

# MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: APRIL 1, 1985

UNION  
CARBIDE

Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of safety, we request that you (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to advise their employees and customers as well.

PRODUCT NAME: METHYL ETHYL KETONE

CHEMICAL NAME: CH<sub>3</sub>COC<sub>2</sub>H<sub>5</sub> CHEMICAL FAMILY: Ketone

MOLECULAR WEIGHT: 72.10

SYNOPSIS: 2-Butanone

HAZARD CLASSIFICATION: Flammable Liquid  
SHIPPING NAME: Methyl Ethyl Ketone

CAS NAME: 2-Butanone

BOILING POINT, °C (°F): 79.6° C (175.3° F) FREEZING POINT: -86.6° C (-123.9° F)

SPECIFIC GRAVITY (at 20° C): 0.8060 at 20/20° C VAPOR PRESSURE at 20° C: 71 mm Hg

VAPOR DENSITY (air = 1): 2.49 SOLUBILITY IN WATER, % by wt. at 20° C: 24

PERCENT VOLATILES BY VOLUME: 100 EVAPORATION RATE (Butyl Acetate = 1): 6.31

APPEARANCE AND ODOR: Clear liquid; nonresidual odor.

| MATERIAL            | %   | TLV     | HAZARD                           |
|---------------------|-----|---------|----------------------------------|
| Methyl Ethyl Ketone | 100 | 200 ppm | Irritant; Harmful<br>If Inhaled. |

FLASH POINT: 21°F, Tag Closed Cup ASTM, D56; 22°F, Tag Open Cup ASTM, D1310

FLAMMABLE LIMITS IN AIR, % by volume: LOWER 1.8 UPPER 10.1

EXTINGUISHING MEDIA: Use water spray, carbon dioxide, dry chemical, or alcohol-type foam applied by manufacturers recommended techniques.

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus and protective clothing. Cool adjacent containers with water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapors form from this product and may travel or move by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equip., static discharges, or other ignition sources at locations distant from handling point.

MK096156

UNION CARBIDE CORPORATION, SOLVENTS AND COATINGS MATERIALS DIVISION

MKIL192799

200 ppm; ACGIH, 1984-5; and OSHA CFR 29, para 1910.1000.

|                 |  |
|-----------------|--|
| SWALLOWING      | Moderately toxic; may cause nausea, vomiting, and diarrhea.  |
| SKIN ABSORPTION | No evidence of adverse effects from available information.   |
| INHALATION      | Concentrations of 100-300 ppm cause nose and throat irritation. Higher concentrations cause more severe irritation, headache, nausea, drowsiness, dizziness, and incoordination. |
| SKIN CONTACT    | Prolonged exposure to liquid or to vapors at concentrations greater than the TLV cause moderate irritation.  |
| EYE CONTACT     | Liquid causes severe irritation. Vapors cause slight to moderate irritation, depending on the concentration.   |

Long-term repeated exposures to high concentrations of vapor may result in central nervous system depression and narcosis.

None currently known.

|            |   |
|------------|---|
| SWALLOWING | Do not induce vomiting. Call a physician.   |
| SKIN       | Remove contaminated clothing and flush skin with water.   |
| INHALATION | Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. |
| EYES       | Immediately flush with water for at least 15 minutes. Seek medical attention.   |

**NOTES TO PHYSICIAN**  
Aspirated methyl ethyl ketone may cause severe lung damage and present a significant hazard. Stomach contents should be evacuated quickly in a manner which avoids aspiration. Otherwise, treatment is directed at the control of symptoms and clinical condition. There is no specific antidote.

**MK096157**

MKIL192800

ETHYL ETHYL KETONE

|  |  |   |                              |
|--|--|---|------------------------------|
| STABILITY  |  | CONDITIONS TO AVOID   | Heat, fire, ignition sources |
| UNSTABLE   | STABLE   |   |                              |
|  | X  |   |                              |
| INCOMPATIBILITY (materials to avoid)   |  | Avoid alkaline materials, mineral acids, and halogens.  |                              |
| HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS   |  | Burning can produce carbon monoxide and/or carbon dioxide.  |                              |
| HAZARDOUS POLYMERIZATION   |  | CONDITIONS TO AVOID   | None                         |
| May Occur  | Will Not Occur   |   |                              |
|  | X  |   |                              |
| STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED   |  | Extinguish and do not turn on any ignition source until area is determined to be free from explosion or fire hazards. Collect large spills for disposal. Flush small spills with water. |                              |
| WASTE DISPOSAL METHOD  |  | Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations. See Section IX.  |                              |
| RESPIRATORY PROTECTION   |  | Self-contained breathing apparatus in high concentrations.  |                              |
| VENTILATION  | This product should be confined within closed equipment, in which case general (mechanical) room ventilation should be satisfactory. Special, local ventilation is needed at points where vapors can be expected to escape to the workplace air. |   |                              |
| PROTECTIVE GLOVES  | Butyl  | EYE PROTECTION  | Monogoggles                  |
| OTHER PROTECTIVE EQUIPMENT   | Eye bath, safety shower  |   |                              |
| <p><b>PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING</b></p> <p>Keep away from heat, sparks, and flame. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.</p> <p><b>FOR INDUSTRY USE ONLY</b></p> |  |   |                              |
| OTHER PRECAUTIONS  |  |   |                              |

MK096158

The information expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

MKIL192801

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/10/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

## I. IDENTIFICATION

PRODUCT NAME: UNION CARBIDE SAG-10 Silicone Antifoam Emulsion  
CHEMICAL NAME: Polydimethylsiloxane emulsion  
CHEMICAL FAMILY: Organosilicone Emulsion  
FORMULA: Mixture  
MOLECULAR WEIGHT: Mixture  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

## II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: >100°C (Mixture)  
SPECIFIC GRAVITY(H<sub>2</sub>O =1): 1.00 @ 25/25°C  
FREEZING POINT: ca. 0°C  
VAPOR PRESSURE AT 20°C: <20 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Dispersible  
APPEARANCE AND ODOR: Milky-white liquid; mild odor.

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030786

MKIL05178

PRODUCT NAME: UNION CARBIDE SAG-10 Silicone Antifoam Emulsion

### III. INGREDIENTS

| MATERIAL   | %   | TLV (Units)      | Hazard        |
|--|-----|------------------|---------------|
| Polydimethylsiloxane emulsion plus proprietary additives | 100 | None Established | See Section V |

### IV. FIRE AND EXPLOSION HAZARD DATA

#### FLASH POINT (test method(s)):

None by Pensky-Martens closed cup ASTM D 93 (Aqueous system)

#### FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

#### EXTINGUISHING MEDIA:

After water evaporates, residue can burn. Use water spray, carbon dioxide, alcohol-type or universal-type foams applied by manufacturer's recommended techniques. Use carbon dioxide or dry chemical for small fires.

#### SPECIAL FIRE FIGHTING PROCEDURES:

None expected to be required.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

### V. HEALTH HAZARD DATA

#### TLV AND SOURCE:

None established by ACGIH or OSHA.

#### EFFECTS OF SINGLE OVEREXPOSURE

##### SWALLOWING:

No evidence of adverse effects from available information.

##### SKIN ABSORPTION:

No evidence of adverse effects from available information.

##### INHALATION:

No evidence of adverse effects from available information.

##### SKIN CONTACT:

No evidence of adverse effects from available information.

##### EYE CONTACT:

No evidence of adverse effects from available information.

JS 030787

MKIL05179

PRODUCT NAME: UNION CARBIDE SAG-10 Silicone Antifoam Emulsion

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030708

MKIL05180

PRODUCT NAME: UNION CARBIDE SAG-10 Silicone Antifoam Emulsion

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

#### RESPIRATORY PROTECTION (specify type):

None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/10/86

Revision Date: 01/22/86

F NUMBER: S00333

Printed in USA

JS 030789

MKIL05181

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

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I. IDENTIFICATION

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PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/2000  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

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II. PHYSICAL DATA (Determined on typical material)

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BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 0.97 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear viscous fluid; low to moderate odor.

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030756

MKIL05148

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/2000

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
>400°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030757

MKIL05149

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/2000

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

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VI. REACTIVITY DATA

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STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030758

MKIL05150

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/2000

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

OTHER PRECAUTIONS:

None.

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: S00279

Printed in USA

JS 030759

MKIL05151

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

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I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/1000  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

---

II. PHYSICAL DATA (Determined on typical material)

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BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 0.97 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear colorless liquid; low odor

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030741

MKIL05133

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/1000

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
>400°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030742

MKIL05134

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/1000

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030743

MKIL05135

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/1000

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

OTHER PRECAUTIONS:

None.

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: S00277

Printed in USA

JS 030744

MKIL05136



# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form L58-OOS-4)



PRODUCT NAME: METHYL ETHYL KETONE

CHEMICAL NAME: —

CHEMICAL FAMILY: Ketones

FORMULA:  $\text{CH}_3\text{COC}_2\text{H}_5$

MOLECULAR WEIGHT: 72.10

SYNONYMS: 2-Butanone

## I. PHYSICAL DATA

|   |                                 |   |           |
|---|---------------------------------|---|-----------|
| BOILING POINT, 760 mm. Hg                     | 79.6°C. (175.3°F.)              | FREEZING POINT                          | -86.6°C.  |
| SPECIFIC GRAVITY ( $\text{H}_2\text{O} = 1$ ) | 0.8061 at 20/20°C.              | VAPOR PRESSURE AT 20°C.                 | 74 mm. Hg |
| VAPOR DENSITY (air = 1)                       | 2.5                             | SOLUBILITY<br>IN WATER, % by wt.        | 24        |
| PER CENT VOLATILES<br>BY VOLUME               | 100                             | EVAPORATION RATE<br>(Butyl Acetate = 1) | 5.7       |
| APPEARANCE AND ODOR                           | Clear liquid; nonresidual odor. |   |           |

## II. HAZARDOUS INGREDIENTS

| MATERIAL                         | %    | TLV (Units) |
|----------------------------------|------|-------------|
| 2-Butanone (Methyl Ethyl Ketone) | ~100 | 200 ppm.    |
| (See Sections III through VIII)  |      |             |
|                                  |      |             |
|                                  |      |             |

## III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 24°F., Tag closed cup ASTM D 56  
[test method(s)] 22°F., Tag open cup ASTM D 1310

|                                      |       |     |       |    |
|--------------------------------------|-------|-----|-------|----|
| FLAMMABLE LIMITS IN AIR, % by volume | LOWER | 1.8 | UPPER | 10 |
|--------------------------------------|-------|-----|-------|----|

EXTINGUISHING  
MEDIA

Use carbon dioxide or dry chemicals for small fires.  
Use alcohol-type foam or water fog for large fires.

SPECIAL FIRE FIGHTING  
PROCEDURES

None

UNUSUAL FIRE AND  
EXPLOSION HAZARDS

None

MK096177

## IV. EMERGENCY PHONE NUMBER

304/744-3487

This number is available days, nights, weekends, and holidays.

While Union Carbide Corporation believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which Union Carbide Corporation assumes legal responsibility. They are offered solely for your consideration, investigation, and verification. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations.

MKIL192819

## IV. HEALTH HAZARD DATA

|                                    |  |
|------------------------------------|--|
| THRESHOLD LIMIT VALUE              | 200 ppm. ACGIH (1977) OSHA CFR 29§ 1000 Table G1   |
| EFFECTS OF OVEREXPOSURE            | Irritation of nose, throat, and eyes. Headache, nausea, vomiting.  |
| EMERGENCY AND FIRST AID PROCEDURES | Remove to fresh air and call a physician. Flush skin and eye contact with water. If swallowed, induce vomiting and call a physician. |

## V. REACTIVITY DATA

| STABILITY                               |                | CONDITIONS TO AVOID  | None |
|---|----------------|--|------|
| UNSTABLE                                | STABLE         |  |      |
| —                                       | ✓              |  |      |
| INCOMPATIBILITY<br>(materials to avoid) |                | Avoid alkaline materials, mineral acids, halogens          |      |
| HAZARDOUS DECOMPOSITION PRODUCTS        |                | Burning can produce carbon monoxide and/or carbon dioxide. |      |
| HAZARDOUS POLYMERIZATION                |                | CONDITIONS TO AVOID  | None |
| May Occur                               | Will not Occur |  |      |
| —                                       | ✓              |  |      |

## VI. SPILL OR LEAK PROCEDURES

|  |  |
|--|--|
| STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED | Eliminate all sources of ignition.<br>Wear suitable protective equipment.<br>Collect for disposal. See Section VIII. |
| WASTE DISPOSAL METHOD                                | Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.                     |

MK096178

MKIL192820

## VII SPECIAL PROTECTION INFORMATION

|  |                         |  |                               |
|--|-------------------------|--|-------------------------------|
| RESPIRATORY PROTECTION<br>(specify type) |                         | Air-supplied respirator in high concentrations |                               |
| VENTILATION                              | LOCAL EXHAUST           | May be needed                                  | SPECIAL —                     |
|  | MECHANICAL<br>(general) | ✓  | OTHER —                       |
| PROTECTIVE GLOVES                        |                         | Rubber gloves                                  | EYE PROTECTION Safety glasses |
| OTHER PROTECTIVE EQUIPMENT               |                         | Safety shower and eye bath                     |                               |

## VIII SPECIAL PRECAUTIONS

|                                       |  |
|---------------------------------------|--|
| PRECAUTIONARY LABELING                | <p>METHYL ETHYL KETONE</p> <p><b>WARNING! HARMFUL IF INHALED<br/>FLAMMABLE<br/>CAUSES EYE IRRITATION</b></p> <p>Avoid breathing vapor.<br/>Avoid contact with eyes.<br/>Keep away from heat, sparks, and open flame.<br/>Use with adequate ventilation.<br/>Wash thoroughly after handling.</p> <p><b>FIRST AID:</b> If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.<br/>In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.</p> <p>FOR INDUSTRY USE ONLY</p> |
| OTHER HANDLING AND STORAGE CONDITIONS | <p>Incineration is the preferred method of disposal. It should also be feasible to treat very dilute solutions in a water treatment plant.</p>   |

MK096179

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 02/18/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

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I. IDENTIFICATION

---

PRODUCT NAME: SILWET Surface Active Copolymer L-722  
CHEMICAL NAME: Polyalkyleneoxide modified polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA: Copolymer  
MOLECULAR WEIGHT: Copolymer  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >150°C (Copolymer)  
SPECIFIC GRAVITY (H<sub>2</sub>O = 1): 0.99 @ 25/25°C  
FREEZING POINT: <-29°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear, slightly yellow liquid, mild odor

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

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JS 030714

MKIL05106

PRODUCT NAME: SILWET Surface Active Copolymer L-722

## III. INGREDIENTS

| MATERIAL  | %     | TLV (Units)      | Hazard        |
|---|-------|------------------|---------------|
| Polyalkyleneoxide<br>modified polydimethyl-<br>siloxane | >99   | None Established | See Section V |
| Toluene   | <0.75 | 100 ppm          | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
255°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use water spray, carbon dioxide, dry chemical, alcohol-type or universal-type foams applied by manufacturer's recommended technique.

## SPECIAL FIRE FIGHTING PROCEDURES:

Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

Toluene 100 ppm ACGIH 1984-85

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

JS 030715

MKIL05107

PRODUCT NAME: SILWEI Surface Active Copolymer L-722

EYE CONTACT:

May cause minimal irritation, seen as excess redness of the conjunctiva.

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

Remove to fresh air.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030716

MKIL05108

PRODUCT NAME: SILWET Surface Active Copolymer L-722

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Collect for disposal.

WASTE DISPOSAL METHOD:

Incinerate in a furnace or bury in a landfill where permitted under appropriate Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

OTHER PRECAUTIONS:

None.

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/24/86

Revision Date: 02/18/86

F NUMBER: S00396

Printed in USA

JS 030717

MKIL05109

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 02/18/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: SILWET Surface Active Copolymer L-7001  
CHEMICAL NAME: Polyalkyleneoxide modified polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA: Copolymer  
MOLECULAR WEIGHT: Copolymer  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >150°C (Copolymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 1.03 @ 25/25°C  
FREEZING POINT: <-29°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Soluble  
APPEARANCE AND ODOR: Clear, slightly yellow liquid; mild odor

---

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

---

UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030719

MKIL05111

PRODUCT NAME: SILWET Surface Active Copolymer L-7001

### III. INGREDIENTS

| MATERIAL  | %     | TLV (Units)      | Hazard        |
|---|-------|------------------|---------------|
| Polyalkyleneoxide<br>modified polydimethyl-<br>siloxane | >99   | None Established | See Section V |
| Toluene   | <0.75 | 100 ppm          | See Section V |

### IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
206°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

#### EXTINGUISHING MEDIA:

Use water spray, carbon dioxide, dry chemical, alcohol-type or universal-type foams applied by manufacturer's recommended technique.

#### SPECIAL FIRE FIGHTING PROCEDURES:

Use self-contained breathing apparatus when fighting fire in an enclosed area.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

### V. HEALTH HAZARD DATA

#### TLV AND SOURCE:

Toluene 100 ppm ACGIH 1984-85

#### EFFECTS OF SINGLE OVEREXPOSURE

##### SWALLOWING:

No evidence of adverse effects from available information.

##### SKIN ABSORPTION:

No evidence of adverse effects from available information.

##### INHALATION:

Prolonged or repeated overexposure to mists or vapors generated at high temperatures may cause loss of coordination.

##### SKIN CONTACT:

No evidence of adverse effects from available information.

JS 030720

MKIL05112

PRODUCT NAME: SILWET Surface Active Copolymer L-7001

EYE CONTACT:

May cause minimal irritation, seen as excess redness of the conjunctiva.

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

Remove to fresh air.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030721

MKIL05113

PRODUCT NAME: SILWEI Surface Active Copolymer L-7001

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Collect for disposal.

WASTE DISPOSAL METHOD:

Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

OTHER PRECAUTIONS:

None.

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/24/86

Revision Date: 02/18/86

F NUMBER: S00395

Printed in USA

JS 030722

MKIL05114

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/200  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY (H<sub>2</sub>O = 1): 0.97 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear colorless liquid; low odor

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

---

UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030770

MKIL05162

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/200

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

## FLASH POINT (test method(s)):

Approx. 500°F Pensky-Martens closed cup ASTM D 93

## FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.

UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire.

Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030771

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/200

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030772

MKIL05164

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/200

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

#### RESPIRATORY PROTECTION (specify type):

None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: S00272

Printed in USA

JS 030773

MKIL05165

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/100  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 0.96 at 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear colorless liquid; low odor

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030702

MKIL05094

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/100

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
390°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030703

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/100

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030704

MKIL05096

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/100

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):  
None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: 500270

Printed in USA

JS 030705

MKIL05097

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/02/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Water Repellent R-20  
CHEMICAL NAME: Sodium methylsilanolate  
CHEMICAL FAMILY: Silicone Resin Solution  
FORMULA: Mixture  
MOLECULAR WEIGHT: Mixture  
SYNONYMS: None  
CAS #: 16589-43-8  
CAS NAME: Silanetriol, methyl-, sodium salt

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >100°C (Mixture)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 1.21 @ 25/25°C  
FREEZING POINT: 0 - 15°C  
VAPOR PRESSURE AT 20°C: <20 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Soluble  
APPEARANCE AND ODOR: Clear, light straw-colored liquid; slight odor.

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

---

UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030724

MKIL05116

PRODUCT NAME: UNION CARBIDE Silicone Water Repellent B-20

## III. INGREDIENTS

| MATERIAL                | %  | TLV (Units)      | Hazard        |
|-------------------------|----|------------------|---------------|
| Sodium methylsilanolate | 30 | None Established | See Section V |
| Ethanol                 | <1 | 1000 ppm         | See Section V |
| Water                   | 69 |                  |               |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
75°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Use water spray to cool fire-exposed containers and structures.  
Use remote spray monitors or fight fire from behind shields.  
Use water spray to disperse vapors; reignition is possible.  
Use self-contained breathing apparatus and body-covering protective clothing.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point.

JS 030725

MKIL05117

PRODUCT NAME: UNION CARBIDE Silicone Water Repellent R-20

#### V. HEALTH HAZARD DATA

##### TLV AND SOURCE:

See Section III.

##### EFFECTS OF SINGLE OVEREXPOSURE

###### SWALLOWING:

Moderately toxic. May cause burns of the mouth, throat, esophagus, and stomach with severe abdominal and chest pain, nausea, vomiting, diarrhea, dizziness, faintness, drowsiness, circulatory collapse, and coma.

###### SKIN ABSORPTION:

No evidence of adverse effects from available information.

###### INHALATION:

May cause dizziness, drowsiness, headache, nausea, and vomiting.

###### SKIN CONTACT:

Causes marked excess redness and swelling with chemical burns.

###### EYE CONTACT:

Causes marked excess redness and swelling of the conjunctiva with chemical burns of the cornea.

##### EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

##### MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Because of its irritating properties, this material may aggravate an existing dermatitis.

##### SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

##### HEALTH HAZARD EVALUATION:

None currently known.

##### OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

##### EMERGENCY AND FIRST AID PROCEDURES:

###### SWALLOWING:

Give two glasses of water or milk at once. Do not induce vomiting.  
Call a physician.

###### SKIN:

Immediately flush skin with plenty of water while removing contaminated clothing and shoes. Wash clothing before wearing again.

###### INHALATION:

Remove to fresh air, call a physician if symptoms persist.

###### EYES:

Immediately flush with plenty of water and continue flushing for at least

JS 030726

MKIL05118

PRODUCT NAME: UNION CARBIDE Silicone Water Repellent B-20

15 minutes. Seek the advice of a physician, preferably an ophthalmologist, urgently.

NOTES TO PHYSICIAN:

This material is alkaline, and, thus, the primary toxic effect will be due to corrosivity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition. Careful gastric lavage is necessary because of the highly irritant nature of the material.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

Material sensitive to acids or strong alkaline solutions.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce alkaline sodium salts, carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Eliminate all sources of ignition! Wear suitable protective equipment; see Section V & VIII. Small spill could be flushed with large amounts of water. Larger spills should be collected for disposal.

WASTE DISPOSAL METHOD:

It may be necessary to neutralize waste material before treatment in a waste water treatment plant, if larger amounts are involved. See Section IX.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

Self-contained breathing apparatus in high vapor concentrations.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Monogoggles

OTHER PROTECTIVE EQUIPMENT:

Eye bath, safety shower, chemical apron

JS 030727

MKIL05119

PRODUCT NAME: UNION CARBIDE Silicone Water Repellent B-20

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Keep away from heat, sparks, and flame. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Keep container closed.  
Use with adequate ventilation. Wash thoroughly after handling.  
DO NOT INDUCE VOMITING!!

OTHER PRECAUTIONS:

SPILLS / DISPOSAL

If neutralization is necessary, use of a dilute solution of a weak acid is preferred. The mixing must be done cautiously and cooling may be needed; a large amount of heat will be generated by the acid-base reaction.

Incineration is an alternate means of disposal.

NOTE -----

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Prepared by: C. R. Thrash

Date: 01/02/86

Revision Date: 01/13/86

F NUMBER: S00237

Printed in USA

JS 030728

MKIL05120

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

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---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/350  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 0.97 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear colorless liquid; low odor

---

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

---

UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 031391

MKIL05263

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/350

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
430°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 031392

MKIL05264

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/350

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 031393

MKIL05265

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/350

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):  
None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: S00273

Printed in USA

JS 031394

MKIL05266

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 02/18/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: SILWET Surface Active Copolymer L-720  
CHEMICAL NAME: Polyalkyleneoxide modified polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA: Copolymer  
MOLECULAR WEIGHT: Copolymer  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >150°C (Copolymer)  
SPECIFIC GRAVITY (H<sub>2</sub>O = 1): 1.04 at 25/25° C  
FREEZING POINT: <-29°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Soluble  
APPEARANCE AND ODOR: Clear, slightly yellow liquid; mild odor

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

---

JS 030776

MKIL05168

PRODUCT NAME: SILWET Surface Active Copolymer L-720

## III. INGREDIENTS

| MATERIAL  | %     | TLV (Units)      | Hazard        |
|---|-------|------------------|---------------|
| Polyalkyleneoxide<br>modified polydimethyl-<br>siloxane | >99   | None Established | See Section V |
| Toluene   | <0.75 | 100 ppm          | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
205°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use water spray, carbon dioxide, dry chemical, alcohol-type or universal-type foams applied by manufacturer's recommended technique.

## SPECIAL FIRE FIGHTING PROCEDURES:

Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

Toluene 100 ppm ACGIH 1984-85

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

JS 030777

MKIL05169

PRODUCT NAME: SILWET Surface Active Copolymer L-720

EYE CONTACT:

No evidence of adverse effects from available information.

EFFECTS OF REPEATED OVEREXPOSURE:

Prolonged exposure to vapors generated at high temperatures may cause irritation, experienced as nasal discomfort and discharge, and cause dizziness, headache, nausea and vomiting.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

Remove to fresh air.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

---

VI. REACTIVITY DATA

---

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030778

MKIL05170

PRODUCT NAME: SILWET Surface Active Copolymer L-720

---

#### VII. SPILL OR LEAK PROCEDURES

---

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Collect for disposal.

WASTE DISPOSAL METHOD:

Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

---

#### VIII. SPECIAL PROTECTION INFORMATION

---

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

---

#### IX. SPECIAL PRECAUTIONS

---

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/24/86

Revision Date: 02/18/86

F NUMBER: S00393

Printed in USA

JS 030779

MKIL05171

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 12/09/85

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

## I. IDENTIFICATION

PRODUCT NAME: Polypropylene Glycol PPG-1025  
CHEMICAL NAME: Polyol  
CHEMICAL FAMILY: Polyol  
FORMULA: Polyol  
MOLECULAR WEIGHT: Not determined  
SYNONYMS: Polypropylene glycol  
CAS #: 25322-69-4  
CAS NAME: Poly(oxy(methyl-1,2-ethanediyl)),a-hydro-w-hydroxy-

## II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: Decomposes  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 1.005 at 68 F (20 C)  
FREEZING POINT: Sets to glass (-13 F (-25 C)  
VAPOR PRESSURE AT 20°C: Less than 30 mmHg  
VAPOR DENSITY (air = 1): Greater than 1  
EVAPORATION RATE  
(Butyl Acetate = 1): Nil  
SOLUBILITY IN WATER by wt: Less than 1 %  
APPEARANCE AND ODOR: Clear, viscous liquid; mild odor

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JS 030800

MKIL05192

PRODUCT NAME: Polypropylene Glycol PPG-1025

## III. INGREDIENTS

| MATERIAL             | %   | ILV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polypropylene glycol | 100 | None established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

## FLASH POINT (test method(s)):

356 F (180 C), Pensky-Martens Closed Cup

450 F (232 C), Cleveland Open Cup

## FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined (nonvolatile fluid)

UPPER: Not determined (nonvolatile fluid)

## EXTINGUISHING MEDIA:

Apply alcohol-type or all-purpose-type foams by manufacturer's recommended techniques for large fires. Use CO2 or dry chemical media for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Use self-contained breathing apparatus and body covering protective clothing; burning can produce oxides of carbon and nitrogen.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

Moderately toxic. May cause nausea, vomiting, and, at high doses, convulsions.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

JS 030801

MKIL05193

PRODUCT NAME: Polypropylene Glycol PEG-1025

EYE CONTACT:

May cause minimal irritation seen as excess redness of the conjunctiva.

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

No information available.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

Drink 2 glasses of water. Induce vomiting if the patient is conscious.

SKIN:

Wash skin with soap and water.

INHALATION:

Remove to fresh air.

EYES:

Flush eyes with water thoroughly and continuously for 15 minutes.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

---

VI. REACTIVITY DATA

---

STABILITY: Stable

CONDITIONS TO AVOID:

Heating in the presence of air (oxygen) to temperatures above 212 F (100 C) may result in the formation of aldehydes.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce oxides of carbon and nitrogen.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None

JS 030802

MKIL05194

PRODUCT NAME: Polyethylene Glycol PEG-1025

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Absorb materials with any commercial waste absorbant. Dike large spills and place materials in salvage containers.

WASTE DISPOSAL METHOD:

Incinerate in a furnace where permitted under appropriate Federal, State and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General mechanical room ventilation is satisfactory for normal handling and storage operations.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:  
FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

None

JS 030803

MKIL05195

PRODUCT NAME: \_\_\_\_\_ Polypropylene Glycol PPG-1025 \_\_\_\_\_

## NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: Russell F. Hill

Date: 12/09/85

Revision Date: 12/19/85

F NUMBER: U00294

Printed in USA

JS 030804

MKIL05196

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/60000  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY (H<sub>2</sub>O = 1): 0.97 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear viscous fluid; low to moderate odor.

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

---

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Specialty Chemicals Division  
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JS 030805

MKIL05197

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/60000

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
>400°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030806

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/60000

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030807

MKIL05199

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/60000

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

#### RESPIRATORY PROTECTION (specify type):

None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: S00285

Printed in USA

JS 030808

MKIL05200

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/10/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

## I. IDENTIFICATION

PRODUCT NAME: UNION CARBIDE SAG-30 Silicone Antifoam Emulsion  
CHEMICAL NAME: Polydimethylsiloxane emulsion  
CHEMICAL FAMILY: Organosilicone Emulsion  
FORMULA: Mixture  
MOLECULAR WEIGHT: Mixture  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

## II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: >100°C (Mixture)  
SPECIFIC GRAVITY(H<sub>2</sub>O =1): 1.004 @ 25/25°C  
FREEZING POINT: ca. 0°C  
VAPOR PRESSURE AT 20°C: <20 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Dispersible  
APPEARANCE AND ODOR: Milky-white liquid; mild odor.

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

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JS 030730

MKIL05122

PRODUCT NAME: UNION CARBIDE SAG-30 Silicone Antifoam Emulsion

## III. INGREDIENTS

| MATERIAL   | %   | TLV (Units)      | Hazard        |
|--|-----|------------------|---------------|
| Polydimethylsiloxane emulsion plus proprietary additives | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

## FLASH POINT (test method(s)):

None by Pensky-Martens closed cup ASTM D 93 (Aqueous system)

## FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

After water evaporates, residue can burn. Use water spray, carbon dioxide, alcohol-type or universal-type foams applied by manufacturer's recommended techniques. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

None expected to be required.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

Causes severe irritation.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030731

MKIL05123

PRODUCT NAME: UNION CARBIDE SAG-30 Silicone Antifoam Emulsion

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

---

VI. REACTIVITY DATA

---

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030732

MKIL05124

PRODUCT NAME: UNION CARBIDE SAG-30 Silicone Antifoam Emulsion

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):  
None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

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Prepared by: C. R. Thrash

Date: 01/10/86

Revision Date: 01/22/86

F NUMBER: S00334

Printed in USA

JS 030733

MKIL05125

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 11/20/85

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

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---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE SAG-5693 Antifoam  
CHEMICAL NAME: Siloxane/polyglycol blend  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA: Mixture  
MOLECULAR WEIGHT: Mixture  
SYNONYMS: None  
CAS #:   
CAS NAME: Trade Secret (Proprietary Mixture)

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >150°C (Polymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O =1): 1.002 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Translucent liquid with characteristic polyether odor.

---

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Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030735

MKIL05127

PRODUCT NAME: UNION CARBIDE SAG-5693 Antifoam

## III. INGREDIENTS

| MATERIAL                    | %   | TLV (Units)      | Hazard        |
|-----------------------------|-----|------------------|---------------|
| Siloxane/polyglycol mixture | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
340°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.  
May cause nausea.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

JS 030736

MKIL05128

PRODUCT NAME: UNION CARBIDE SAG-5423 Antifoam

EYE CONTACT:

No evidence of adverse effects from available information.

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

Toxicology studies have shown the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030737

MKIL05129

PRODUCT NAME: UNION CARBIDE SAG-5623 Antifoam

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Collect for disposal.

Absorb residue with inert absorbant.

WASTE DISPOSAL METHOD:

Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

None required in normal use.

VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

OTHER PRECAUTIONS:

None.

JS 030738

MKIL05130

PRODUCT NAME: UNION CARBIDE SAG-5423 Antifoam

## NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash  
Date: 11/20/85  
Revision Date: 11/26/85  
F NUMBER: S00104

Printed in USA

JS 030739

MKIL05131

UNION CARBIDE CORPORATION  
Specialty Chemicals Division

## MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 01/08/86

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology, and fire prevention may have to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

To promote safe handling, each Customer should (1) notify its employees, agents, and contractors of the information on this Material Safety Data Sheet, and any Product hazards and safety information, (2) furnish a copy of this Material Safety Data Sheet to each of its customers for the Product, and (3) request such customers to notify their employees and customers for the Product of the information on this Material Safety Data Sheet and any Product hazards and safety information.

---

I. IDENTIFICATION

---

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/10000  
CHEMICAL NAME: Polydimethylsiloxane  
CHEMICAL FAMILY: Organosilicone fluid  
FORMULA:  $((CH_3)_2SiO)_x$   
MOLECULAR WEIGHT: Polymer  
SYNONYMS: None  
CAS #: 63148-62-9  
CAS NAME: Siloxanes and Silicones, di-methyl

---

II. PHYSICAL DATA (Determined on typical material)

---

BOILING POINT, 760 mm Hg: >200°C (Polymer)  
SPECIFIC GRAVITY(H<sub>2</sub>O = 1): 0.97 @ 25/25°C  
FREEZING POINT: <-25°C  
VAPOR PRESSURE AT 20°C: <1 mm Hg  
VAPOR DENSITY (air = 1): >1  
EVAPORATION RATE  
(Butyl Acetate = 1): <1  
SOLUBILITY IN WATER by wt: Insoluble  
APPEARANCE AND ODOR: Clear viscous fluid; low to moderate odor.

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

---

UNION CARBIDE CORPORATION  
Specialty Chemicals Division  
39 Old Ridgebury Road, Danbury, CT. 06817-0001

JS 030746

MKIL05138

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/10000

## III. INGREDIENTS

| MATERIAL             | %   | TLV (Units)      | Hazard        |
|----------------------|-----|------------------|---------------|
| Polydimethylsiloxane | 100 | None Established | See Section V |

## IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)):  
>400°F Pensky-Martens closed cup ASTM D 93

FLAMMABLE LIMITS IN AIR, by volume:

LOWER: Not determined.  
UPPER: Not determined.

## EXTINGUISHING MEDIA:

Use alcohol-type or universal-type foams applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires.

## SPECIAL FIRE FIGHTING PROCEDURES:

Don't spray a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

In extreme fire conditions, this material may present a floating fire hazard.

## V. HEALTH HAZARD DATA

## TLV AND SOURCE:

None established by ACGIH or OSHA.

## EFFECTS OF SINGLE OVEREXPOSURE

## SWALLOWING:

No evidence of adverse effects from available information.

## SKIN ABSORPTION:

No evidence of adverse effects from available information.

## INHALATION:

No evidence of adverse effects from available information.

## SKIN CONTACT:

No evidence of adverse effects from available information.

## EYE CONTACT:

No evidence of adverse effects from available information.

JS 030747

MKIL05139

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/10000

EFFECTS OF REPEATED OVEREXPOSURE:

No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN

HEALTH HAZARD EVALUATION:

None currently known.

OTHER EFFECTS OF OVEREXPOSURE:

None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

No harmful effects expected.

SKIN:

Wash with soap and water.

INHALATION:

No emergency care anticipated.

EYES:

Flush with water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

None.

INCOMPATIBILITY (materials to avoid):

None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce carbon monoxide, carbon dioxide, and oxides of silicon.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None.

JS 030740

MKIL05140

PRODUCT NAME: UNION CARBIDE Silicone Fluid L-45/10000

#### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:  
Collect for disposal.

#### WASTE DISPOSAL METHOD:

Bury in a landfill where permitted under appropriate Federal, State, and local regulations.

#### VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):  
None required in normal use.

#### VENTILATION:

General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Safety glasses

#### OTHER PROTECTIVE EQUIPMENT:

Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to good manufacturing practice should be followed in handling and storage.

#### OTHER PRECAUTIONS:

None.

#### NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

Prepared by: C. R. Thrash

Date: 01/08/86

Revision Date: 01/20/86

F NUMBER: S00282

Printed in USA

JS 030749

MKIL05141

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|   |   |   |
|---|---|---|
| MANUFACTURER'S NAME<br>United States Borax Chemical Corp.   |   | EMERGENCY TELEPHONE NO.<br>(213) 381-5311 |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>3075 Wilshire Blvd., Los Angeles, CA 90005 |   |   |
| CHEMICAL NAME AND SYNONYMS<br>Boric Acid  | TRADE NAME AND SYNONYMS<br>Boric Acid     |   |
| CHEMICAL FAMILY<br>Borate   | FORMULA<br>H <sub>2</sub> BO <sub>3</sub> |   |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV (Units) | ALLOYS AND METALLIC COATINGS           | % | TLV (Units) |
|---|---|-------------|--|---|-------------|
| PIGMENTS  |   |             | BASE METAL                             |   |             |
| CATALYST  |   |             | ALLOYS                                 |   |             |
| VEHICLE Does Not Apply                                |   |             | METALLIC COATINGS Does Not Apply       |   |             |
| SOLVENTS  |   |             | FILLER METAL PLUS COATING OR CORE FLUX |   |             |
| ADDITIVES   |   |             | OTHERS                                 |   |             |
| OTHERS  |   |             |  |   |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |             |  | % | TLV (Units) |
| NONE  |   |             |  |   |             |
|   |   |             |  |   |             |
|   |   |             |  |   |             |
|   |   |             |  |   |             |

## SECTION III - PHYSICAL DATA

|   |  |      |
|---|--|------|
| BOILING POINT (°F.) Does Not Apply        | SPECIFIC GRAVITY (H <sub>2</sub> O=1)      | 1.51 |
| VAPOR PRESSURE (mm Hg.) Does Not Apply    | PERCENT. VOLATILE BY VOLUME (%)            | None |
| VAPOR DENSITY (AIR=1) Does Not Apply      | EVAPORATION RATE (_____ -1) Does Not Apply |      |
| SOLUBILITY IN WATER Moderate              |  |      |
| APPEARANCE AND ODOR White, odorless solid |  |      |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|   |                                 |     |     |
|---|---------------------------------|-----|-----|
| FLASH POINT (Method used) Does Not Apply                  | FLAMMABLE LIMITS Does Not Apply | Lel | Uel |
| EXTINGUISHING MEDIA None. Product inherent fire retardant |                                 |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES None                     |                                 |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS None                   |                                 |     |     |

JS 033587



5353 JILLSON STREET

LOS ANGELES, CALIF. 90040

PHONE: 213-269-9531

FEB 20 1981

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|   |                                       |   |
|---|---------------------------------------|---|
| MANUFACTURER'S NAME<br>United States Borax Chemical Corp.   |                                       | EMERGENCY TELEPHONE NO.<br>(213) 381-5311 |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>3075 Wilshire Blvd., Los Angeles, CA 90005 |                                       |   |
| CHEMICAL NAME AND SYNONYMS<br>Boric Acid<br>CHEMICAL FAMILY<br>Borate                             | TRADE NAME AND SYNONYMS<br>Boric Acid |   |
| FORMULA<br>$H_2BO_3$  |                                       |   |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV<br>(Units) | ALLOYS AND METALLIC COATINGS              | % | TLV<br>(Units) |
|---|---|----------------|---|---|----------------|
| PIGMENTS  |   |                | BASE METAL                                |   |                |
| CATALYST  |   |                | ALLOYS                                    |   |                |
| VEHICLE Does Not Apply                                |   |                | METALLIC COATINGS Does Not Apply          |   |                |
| SOLVENTS  |   |                | FILLER METAL<br>PLUS COATING OR CORE FLUX |   |                |
| ADDITIVES   |   |                | OTHERS                                    |   |                |
| OTHERS  |   |                |   |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |                |   | % | TLV<br>(Units) |
| NONE  |   |                |   |   |                |
|   |   |                |   |   |                |
|   |   |                |   |   |                |
|   |   |                |   |   |                |

## SECTION III - PHYSICAL DATA

|   |   |      |
|---|---|------|
| BOILING POINT (°F.) Does Not Apply        | SPECIFIC GRAVITY ( $H_2O=1$ )                 | 1.51 |
| VAPOR PRESSURE (mm Hg.) Does Not Apply    | PERCENT VOLATILE<br>BY VOLUME (%)             | None |
| VAPOR DENSITY (AIR=1) Does Not Apply      | EVAPORATION RATE<br>(_____ =1) Does Not Apply |      |
| SOLUBILITY IN WATER Moderate              |   |      |
| APPEARANCE AND ODOR White, odorless solid |   |      |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|  |                                    |     |     |
|--|------------------------------------|-----|-----|
| FLASH POINT (Method used)<br>Does Not Apply                  | FLAMMABLE LIMITS<br>Does Not Apply | Lel | Uel |
| EXTINGUISHING MEDIA<br>None. Product inherent fire retardant |                                    |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES<br>None                     |                                    |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>None                   |                                    |     |     |

| SECTION V - HEALTH HAZARD DATA     |   |
|------------------------------------|---|
| THRESHOLD LIMIT VALUE              | 10mg/M <sup>3</sup> for B <sub>2</sub> O <sub>3</sub> (Amer. Conf. of Gov't Hygienists, 3rd Edition, 1971*) |
| EFFECTS OF OVEREXPOSURE            | Used as eye wash in dilute solutions  |
| EMERGENCY AND FIRST AID PROCEDURES | Wash with water where large doses in eyes result.   |

| SECTION VI - REACTIVITY DATA              |                |    |                     |
|---|----------------|----|---------------------|
| STABILITY                                 | UNSTABLE       |    | CONDITIONS TO AVOID |
|   | STABLE         | XX | None                |
| INCOMPATIBILITY (Materials to avoid) None |                |    |                     |
| HAZARDOUS DECOMPOSITION PRODUCTS None     |                |    |                     |
| HAZARDOUS POLYMERIZATION                  | MAY OCCUR      |    | CONDITIONS TO AVOID |
|   | WILL NOT OCCUR | XX | None                |

| SECTION VII - SPILL OR LEAK PROCEDURES                    |  |
|---|--|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED |  |
| Standard disposal procedures - presents no health hazard  |  |
| WASTE DISPOSAL METHOD                                     |  |
| Standard disposal procedures - presents no health hazard  |  |

| SECTION VIII - SPECIAL PROTECTION INFORMATION                         |                      |                   |
|---|----------------------|-------------------|
| RESPIRATORY PROTECTION (Specify type) No specific protection required |                      |                   |
| VENTILATION   | LOCAL EXHAUST        | SPECIAL           |
|   | MECHANICAL (General) | Normal            |
| PROTECTIVE GLOVES   | Not needed           | EYE PROTECTION    |
| OTHER PROTECTIVE EQUIPMENT  | None                 | Avoid eye contact |

| SECTION IX - SPECIAL PRECAUTIONS                |  |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING |  |
| None needed                                     |  |
| OTHER PRECAUTIONS                               |  |
| None needed                                     |  |

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|  |  |   |
|--|--|---|
| MANUFACTURER'S NAME<br><b>U.S. BORAX &amp; CHEMICAL CORPORATION</b>          |  | EMERGENCY TELEPHONE NO.<br><b>(213) 381-5311</b>  |
| ADDRESS <b>3875 Wilshire Blvd., Suite 400, Los Angeles, California 90010</b> |  |   |
| CHEMICAL NAME AND SYNONYMS<br><b>SODIUM TETRABORATE ANHYDROUS</b>            |  | TRADE NAME AND SYNONYMS<br><b>ANHYDROUS BORAX</b> |
| CHEMICAL FAMILY<br><b>SODIUM BORATE</b>                                      | FORMULA<br><b>Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub></b> |   |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | %                        | TLV (Units) | ALLOYS AND METALLIC COATINGS           | %                        | TLV (Units) |
|---|--------------------------|-------------|--|--------------------------|-------------|
| PIGMENTS  |                          |             | BASE METAL                             |                          |             |
| CATALYST  | <b>This Section Does</b> |             | ALLOYS                                 | <b>This Section Does</b> |             |
| VEHICLE   | <b>Not Apply</b>         |             | METALLIC COATINGS                      | <b>Not Apply</b>         |             |
| SOLVENTS  |                          |             | FILLER METAL PLUS COATING OR CORE FLUX |                          |             |
| ADDITIVES   |                          |             | OTHERS                                 |                          |             |
| OTHERS  |                          |             |  |                          |             |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |                          |             |  | %                        | TLV (Units) |
|   |                          |             |  |                          |             |
| <b>NONE</b>   |                          |             |  |                          |             |
|   |                          |             |  |                          |             |
|   |                          |             |  |                          |             |

## SECTION III - PHYSICAL DATA

|  |                       |                                       |                       |
|--|-----------------------|---------------------------------------|-----------------------|
| BOILING POINT (°F.)                              | <b>Does Not Apply</b> | SPECIFIC GRAVITY (H <sub>2</sub> O=1) | <b>2.4</b>            |
| VAPOR PRESSURE (mm Hg.)                          | <b>"</b>              | PERCENT VOLATILE BY VOLUME (%)        | <b>None</b>           |
| VAPOR DENSITY (AIR=1)                            | <b>"</b>              | EVAPORATION RATE (_____=1)            | <b>Does not Apply</b> |
| SOLUBILITY IN WATER                              | <b>Moderate</b>       |                                       |                       |
| APPEARANCE AND ODOR <b>White, odorless solid</b> |                       |                                       |                       |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|   |                       |                  |                       |     |     |
|---|-----------------------|------------------|-----------------------|-----|-----|
| FLASH POINT (Method used)   | <b>Does Not Apply</b> | FLAMMABLE LIMITS | <b>Does Not Apply</b> | Lel | Uel |
| EXTINGUISHING MEDIA <b>None: Material has fire retardant properties</b> |                       |                  |                       |     |     |
| SPECIAL FIRE FIGHTING PROCEDURES <b>NONE</b>                            |                       |                  |                       |     |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS <b>NONE</b>                          |                       |                  |                       |     |     |

JS 033564

| SECTION V HEALTH HAZARD DATA       |  |
|------------------------------------|--|
| THRESHOLD LIMIT VALUE              | 10mg/M <sup>3</sup> for B <sub>2</sub> O <sub>3</sub> (Amer. Conf. of Gov't Hygienists, 3rd Edition 1971*) |
| EFFECTS OF OVEREXPOSURE            | Moderate skin and eye irritant   |
| EMERGENCY AND FIRST AID PROCEDURES | Wash with water.   |

| SECTION VI REACTIVITY DATA           |                |      |  |
|--------------------------------------|----------------|------|--|
| STABILITY                            | UNSTABLE       |      | CONDITIONS TO AVOID  |
|                                      | STABLE         | xx   | Keep dry: slowly absorbs and atmospheric or free water reverting to hydrated form. |
| INCOMPATIBILITY (Materials to avoid) |                | None |  |
| HAZARDOUS DECOMPOSITION PRODUCTS     |                | None |  |
| HAZARDOUS POLYMERIZATION             | MAY OCCUR      |      | CONDITIONS TO AVOID  |
|                                      | WILL NOT OCCUR | xxx  | Keep dry.  |

| SECTION VII SPILL OR LEAK PROCEDURES                      |  |
|---|--|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED |  |
| Standard disposal procedures - presents no health hazard. |  |
| WASTE DISPOSAL METHOD                                     |  |
| Standard disposal procedures - presents no health hazard. |  |

| SECTION VIII SPECIAL PROTECTION INFORMATION                          |                      |            |                   |
|--|----------------------|------------|-------------------|
| RESPIRATORY PROTECTION (Specify type) No special protection required |                      |            |                   |
| VENTILATION  | LOCAL EXHAUST        | Normal     | SPECIAL           |
|  | MECHANICAL (General) |            | OTHER             |
| PROTECTIVE GLOVES  |                      | Not needed | EYE PROTECTION    |
| OTHER PROTECTIVE EQUIPMENT   |                      | None       | Avoid eye contact |

| SECTION IX SPECIAL PRECAUTIONS                  |              |
|---|--------------|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING | None needed  |
| OTHER PRECAUTIONS                               | None needed. |

JS 033565

\*Theoretical B<sub>2</sub>O<sub>3</sub> value in Anhydrous Borax: 69.2% B<sub>2</sub>O<sub>3</sub>  
 product not listed in the American Conference of Gov't Hygienists.

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

|   |  |   |
|---|--|---|
| MANUFACTURER'S NAME<br>United States Borax Chemical Corp.   |  | EMERGENCY TELEPHONE NO.<br>(213) 381-5311 |
| ADDRESS (Number, Street, City, State, and ZIP Code)<br>3075 Wilshire Blvd., Los Angeles, CA 90005 |  |   |
| CHEMICAL NAME AND SYNONYMS<br>Sodium Tetraborate Pentahydrate                                     |  | TRADE NAME AND SYNONYMS<br>Borax 5 mol    |
| CHEMICAL FAMILY<br>Sodium borate  | FORMULA<br>$\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$ |   |

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES, & SOLVENTS                     | % | TLV<br>(Units) | ALLOYS AND METALLIC COATINGS              | % | TLV<br>(Units) |
|---|---|----------------|---|---|----------------|
| PIGMENTS  |   |                | BASE METAL                                |   |                |
| CATALYST  |   |                | ALLOYS                                    |   |                |
| VEHICLE Does Not Apply                                |   |                | METALLIC COATINGS Does Not Apply          |   |                |
| SOLVENTS  |   |                | FILLER METAL<br>PLUS COATING OR CORE FLUX |   |                |
| ADDITIVES   |   |                | OTHERS                                    |   |                |
| OTHERS  |   |                |   |   |                |
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES |   |                |   | % | TLV<br>(Units) |
| NONE  |   |                |   |   |                |
|   |   |                |   |   |                |
|   |   |                |   |   |                |
|   |   |                |   |   |                |

## SECTION III - PHYSICAL DATA

|   |  |  |      |
|---|--|--|------|
| BOILING POINT (°F.) Does Not Apply        |  | SPECIFIC GRAVITY (H <sub>2</sub> O=1)          | 1.73 |
| VAPOR PRESSURE (mm Hg.) Does Not Apply    |  | PERCENT VOLATILE<br>BY VOLUME (%)              | None |
| VAPOR DENSITY (AIR=1) Does Not Apply      |  | EVAPORATION RATE<br>(_____ = 1) Does Not Apply |      |
| SOLUBILITY IN WATER Moderate              |  |  |      |
| APPEARANCE AND ODOR White, odorless solid |  |  |      |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

|  |                                    |           |     |
|--|------------------------------------|-----------|-----|
| FLASH POINT (Method used)<br>Does Not Apply                  | FLAMMABLE LIMITS<br>Does Not Apply | Lol       | Uol |
| EXTINGUISHING MEDIA<br>None. Product inherent fire retardant |                                    |           |     |
| SPECIAL FIRE FIGHTING PROCEDURES<br>None                     |                                    |           |     |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>None                   |                                    |           |     |
|  |                                    | JS 033566 |     |

| SECTION V - HEALTH HAZARD DATA     |   |
|------------------------------------|---|
| THRESHOLD LIMIT VALUE              | 10mg/M <sup>3</sup> for B <sub>2</sub> O <sub>3</sub> (Amer. Conf. of Gov't Hygienists, 3rd Edition, 1971*) |
| EFFECTS OF OVEREXPOSURE            | Minor skin irritant; moderate eye irritant  |
| EMERGENCY AND FIRST AID PROCEDURES | Wash with water   |

| SECTION VI - REACTIVITY DATA         |                |    |                     |
|--------------------------------------|----------------|----|---------------------|
| STABILITY                            | UNSTABLE       |    | CONDITIONS TO AVOID |
|                                      | STABLE         | XX | None                |
| INCOMPATIBILITY (Materials to avoid) |                |    |                     |
| None                                 |                |    |                     |
| HAZARDOUS DECOMPOSITION PRODUCTS     |                |    |                     |
| None                                 |                |    |                     |
| HAZARDOUS POLYMERIZATION             | MAY OCCUR      |    | CONDITIONS TO AVOID |
|                                      | WILL NOT OCCUR | XX | None                |

| SECTION VII - SPILL OR LEAK PROCEDURES                    |  |
|---|--|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED |  |
| Standard disposal procedures - presents no health hazard  |  |
| WASTE DISPOSAL METHOD                                     |  |
| Standard disposal procedures - presents no health hazard  |  |

| SECTION VIII - SPECIAL PROTECTION INFORMATION |                      |                   |         |
|---|----------------------|-------------------|---------|
| RESPIRATORY PROTECTION (Specify type)         |                      |                   |         |
| No specific protection required               |                      |                   |         |
| VENTILATION                                   | LOCAL EXHAUST        | Normal            | SPECIAL |
|   | MECHANICAL (General) |                   | OTHER   |
| PROTECTIVE GLOVES                             |                      | EYE PROTECTION    |         |
| Not Needed                                    |                      | Avoid eye contact |         |
| OTHER PROTECTIVE EQUIPMENT                    |                      |                   |         |
| None  |                      |                   |         |

| SECTION IX - SPECIAL PRECAUTIONS                |  |
|---|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING |  |
| None needed                                     |  |
| OTHER PRECAUTIONS                               |  |
| None needed                                     |  |

# Vulcan CHEMICALS

Division of Vulcan Materials Company

## MATERIAL SAFETY DATA SHEET

(ESSENTIALLY SIMILAR TO FORM OSHA-20)

SEE IMPORTANT NOTICE ON BOTTOM OF OTHER SIDE

24 Hour Emergency Phone (316) 524-5751

| I - PRODUCT IDENTIFICATION   |  |
|--|--|
| MANUFACTURER'S NAME AND ADDRESS<br>Vulcan Materials Company, Chemicals Division, P. O. Box 7689, Birmingham, AL 35253-0689 |  |
| CHEMICAL NAME<br>Ethylene Trichloride  | CHEMICAL FORMULA<br>$\text{CHCl} = \text{CCl}_2$ |
| TRADE NAME AND SYNONYMS<br>Trichloroethylene   | CHEMICAL FAMILY<br>Chlorinated Hydrocarbon       |
| CAS REGISTRY NO.<br>79-01-6  | DOT IDENTIFICATION NO.<br>UN 1710                |

| II - HAZARDOUS INGREDIENTS |        |             |
|----------------------------|--------|-------------|
| MATERIAL OR COMPONENT      | % (wt) | PEL (Units) |
|                            |        |             |

| III - PHYSICAL DATA                        |   |
|--|---|
| BOILING POINT (°F)<br>188°F                | SPECIFIC GRAVITY (H <sub>2</sub> O=1)<br>1.5                      |
| VAPOR PRESSURE (mm Hg.)<br>@20°C 58        | PERCENT. VOLATILE BY VOLUME (%)<br>100                            |
| VAPOR DENSITY (AIR=1)<br>4.5               | EVAPORATION RATE (ether=1)<br>0.3                                 |
| SOLUBILITY IN WATER<br>0.10gm/100gm @ 25°C | APPEARANCE AND ODOR<br>Colorless clear liquid; mildly sweet odor. |

| IV - FIRE AND EXPLOSION HAZARD DATA  |                                   |                     |                      |
|--|-----------------------------------|---------------------|----------------------|
| FLASH POINT (Method used)<br>None (TCC)  | FLAMMABLE LIMITS<br>in air @ 25°C | Lower<br>8.0% (vol) | Upper<br>10.5% (vol) |
| EXTINGUISHING MEDIA<br>CO <sub>2</sub> , Dry Chemical, Foam  |                                   |                     |                      |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Self-contained breathing apparatus should be used in areas where trichloroethylene is stored.                    |                                   |                     |                      |
| UNUSUAL FIRE AND EXPLOSION HAZARDS<br>Concentrated vapors can be ignited by high intensity heat source.<br>Decomposition produces hydrogen chloride. |                                   |                     |                      |

| V - REACTIVITY DATA  |                |   |  |
|--|----------------|---|--|
| STABILITY  | UNSTABLE       |   | CONDITIONS TO AVOID                                    |
|  | STABLE         | X | Contact with open flame, hot surfaces or electric arcs |
| INCOMPATIBILITY (Materials to avoid)<br>Strong alkalis, oxidizing materials        |                |   |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>Dichloroacetylene, Hydrogen Chloride, Phosgene |                |   |  |
| HAZARDOUS POLYMERIZATION   | MAY OCCUR      |   | CONDITIONS TO AVOID<br>MK095890                        |
|  | WILL NOT OCCUR | X |  |

VMC-3239

MKIL192625

| VI - HEALTH HAZARD DATA            |   |
|------------------------------------|---|
| OSHA PERMISSIBLE EXPOSURE LIMIT    | 100 ppm 8 hour TWA; 200 ppm acceptable ceiling;<br>300 ppm peak for 5 minutes in any 2 hours (29 CFR Part 1910.1000).   |
| ACGIH: 50 ppm 8 hour TLV.          |   |
| EFFECTS OF OVEREXPOSURE            |   |
| INHALATION:                        | Major route of exposure; acute exposures will cause irritation of nose and throat, dryness, drunkenness and drowsiness, unconsciousness and even death in extreme cases.          |
| SKIN CONTACT/ABSORPTION:           | Prolonged or repeated skin contact can cause dermatitis through defatting of skin. Absorption through skin is not a significant route of exposure - mildly irritating on contact. |
| INGESTION:                         | Unlikely route of exposure. Moderate to low oral toxicity. Effects are similar to those from inhalation.  |
| EYES:                              | Mild irritation, but no corneal injury likely. May cause conjunctivitis.  |
| EMERGENCY AND FIRST AID PROCEDURES |   |
| EYES AND SKIN                      | Remove contaminated clothing and flush exposed areas with water for 5 to 15 minutes.  |
| INHALATION                         | Remove to fresh air. If breathing has stopped, administer respiration or oxygen if available.   |
| INGESTION                          | Do not induce vomiting. Call physician and obtain medical attention.  |

| VII - SPILL OR LEAK PROCEDURES  |
|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED   |
| Evacuate the area, ventilate, avoid breathing vapors, contain spill. Clean up area (wear protective clothing) by mopping or with absorbent material, transfer to closed container. Spills over 1000 lbs. are reportable under 49CFR part 172.101.                       |
| WASTE DISPOSAL METHOD Recovered liquids may be sent to a licensed reclaimer or incinerated. Contaminated absorbent material must be disposed of in a permitted waste management facility. Consult federal, state or local disposal authorities for approved procedures. |

| VIII - SPECIAL PROTECTION INFORMATION                                |
|--|
| SPECIFIC PERSONAL PROTECTIVE EQUIPMENT                               |
| RESPIRATORY None required when used with adequate ventilation.       |
| EYE Chemical safety goggles. Contact lenses should not be worn.      |
| SKIN Neoprene, Viton, polyvinyl alcohol coated gloves or equivalent. |
| OTHER Protective headgear & apron when splashing is a problem.       |
| VENTILATION REQUIREMENTS   |
| Sufficient to maintain below PEL.                                    |

| IX - SPECIAL PRECAUTIONS   |
|--|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid contact with skin & avoid breathing vapors. Pipe vents outdoors. Store in cool, dry, ventilated area. Vapors are heavier than air and will collect in low areas. |
| OTHER PRECAUTIONS  |
| Prevent moist air from entering storage. No smoking in presence of vapors.   |
| MK095891   |

DATE September 1982

VMC 3239

NOTICE: Vulcan Chemicals believes that the information contained on this Material Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulations, rules or insurance requirements.

NO WARRANTY, EXPRESS OR IMPLIED, OR MERCHANTABILITY, FITNESS OR OTHERWISE IS MADE.

MKIL192626

# Vulcan CHEMICALS

Division of Vulcan Materials Company

## MATERIAL SAFETY DATA SHEET

(ESSENTIALLY SIMILAR TO FORM OSHA-20)

SEE IMPORTANT NOTICE ON BOTTOM OF OTHER SIDE

24 Hour Emergency Phone (316) 524-5751

| I - PRODUCT IDENTIFICATION   |  |
|--|--|
| MANUFACTURER'S NAME AND ADDRESS<br>Vulcan Materials Company, Chemicals Division, P. O. Box 7689, Birmingham, AL 35253-0689 |  |
| CHEMICAL NAME<br>Dichloromethane   | CHEMICAL FORMULA<br><chem>CH2Cl2</chem>    |
| TRADE NAME AND SYNONYMS<br>Methylene Chloride  | CHEMICAL FAMILY<br>Chlorinated Hydrocarbon |
| CAS REGISTRY NO.<br>75-09-2  | DOT IDENTIFICATION NO.<br>UN 1593          |

| II - HAZARDOUS INGREDIENTS |        |             |
|----------------------------|--------|-------------|
| MATERIAL OR COMPONENT      | % (wt) | PEL (Units) |
|                            |        |             |

| III - PHYSICAL DATA                        |   |
|--|---|
| BOILING POINT (°F.)<br>104°F               | SPECIFIC GRAVITY (H <sub>2</sub> O = 1)<br>1.3                    |
| VAPOR PRESSURE (mm Hg.)<br>@20°C 350       | PERCENT, VOLATILE BY VOLUME (%)<br>100                            |
| VAPOR DENSITY (AIR = 1)<br>2.9             | EVAPORATION RATE (ether = 1)<br>0.7                               |
| SOLUBILITY IN WATER<br>1.32gm/100gm @ 25°C | APPEARANCE AND ODOR<br>Colorless clear liquid; mildly sweet odor. |

| IV - FIRE AND EXPLOSION HAZARD DATA   |                                    |                    |                    |
|---|------------------------------------|--------------------|--------------------|
| FLASH POINT (Method used)<br>None (TCC)   | FLAMMABLE LIMITS<br>in air @ 212°F | Lower<br>16% (vol) | Upper<br>19% (vol) |
| EXTINGUISHING MEDIA<br>Water Fog, Dry Chemical, Carbon Dioxide  |                                    |                    |                    |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Self-contained breathing apparatus should be used in areas where methylene chloride is stored.                |                                    |                    |                    |
| UNUSUAL FIRE AND EXPLOSION HAZARDS Concentrated vapors can be ignited by high intensity heat source.<br>Decomposition produces hydrogen chloride. |                                    |                    |                    |

| V - REACTIVITY DATA   |                |   |  |
|---|----------------|---|--|
| STABILITY   | UNSTABLE       |   | CONDITIONS TO AVOID                                    |
|   | STABLE         | X | Contact with open flame, hot surfaces or electric arcs |
| INCOMPATIBILITY (Materials to avoid)<br>Strong alkalis, oxidizing material.     |                |   |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>Hydrogen chloride, phosgene (small amounts) |                |   |  |
| HAZARDOUS POLYMERIZATION  | MAY OCCUR      |   | CONDITIONS TO AVOID<br>MK096063                        |
|   | WILL NOT OCCUR | X | None   |

| VI - HEALTH HAZARD DATA            |  |
|------------------------------------|--|
| OSHA PERMISSIBLE EXPOSURE LIMIT    | 500 ppm 8 hour TWA; 1000 ppm ceiling; 2000 ppm peak for 5 minutes in any 2 hours. (29CFR Part 1910.1000)   |
| ACGIH:                             | 100 ppm 8 hour TLV; 500 ppm 15 min STEL.   |
| EFFECTS OF OVEREXPOSURE            |  |
| INHALATION:                        | Major route of exposure - low systemic toxicity; acute exposures above 1000 ppm range may cause light-headedness, dizziness, headache, vertigo, drowsiness, narcosis, unconsciousness and even death in extreme cases. |
| SKIN CONTACT/ABSORPTION:           | Prolonged skin exposure can cause burning sensation. Repeated exposures are mildly irritating and may cause slight dermatitis and defatting of skin.   |
| INGESTION:                         | Unlikely route of exposure, ingestion of small quantities is not likely to be toxic.   |
| EYES:                              | Liquid is painfully irritating to the eyes. Corneal injury is unlikely.  |
| EMERGENCY AND FIRST AID PROCEDURES |  |
| EYES AND SKIN                      | Remove contaminated clothing and flush exposed areas with water for 5 to 15 minutes.   |
| INHALATION                         | Remove to fresh air. If breathing has stopped, administer respiration or oxygen if available.  |
| INGESTION                          | Do not induce vomiting. Call physician and obtain medical attention.   |

| VII - SPILL OR LEAK PROCEDURES                            |   |
|---|---|
| STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED | Evacuate the area, ventilate, avoid breathing vapors, contain spill. Clean up area (wear protective clothing) by mopping or with absorbent material, transfer to closed container.  |
| WASTE DISPOSAL METHOD                                     | Recovered liquids may be sent to a licensed reclaimer or incinerated. Contaminated absorbent material must be disposed of in a permitted waste management facility. Consult federal, state or local disposal authorities for approved procedures. |

| VIII - SPECIAL PROTECTION INFORMATION  |   |
|--|---|
| SPECIFIC PERSONAL PROTECTIVE EQUIPMENT |   |
| RESPIRATORY                            | None required when used with adequate ventilation.              |
| EYE                                    | Chemical safety goggles. Contact lenses should not be worn.     |
| SKIN                                   | Neoprene, Viton, polyvinyl alcohol coated gloves or equivalent. |
| OTHER                                  | Protective headgear & apron when splashing is a problem.        |
| VENTILATION REQUIREMENTS               |   |
| Sufficient to maintain below PEL.      |   |

MK096064

| IX - SPECIAL PRECAUTIONS                        |   |
|---|---|
| PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING | Avoid contact with skin & avoid breathing vapors. Pipe vents outdoors. Store in cool, dry, ventilated area. Vapors are heavier than air and will collect in low areas.  |
| OTHER PRECAUTIONS                               | Prevent moist air from entering storage. No smoking in presence of vapors. Contact with aluminum parts in a pressurizable fluid system may cause violent reactions. Consult equipment supplier for further information. |

DATE September 1982

VMC 3239

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MKIL192713



Division of Vulcan Materials Company

## MATERIAL SAFETY DATA SHEET

(ESSENTIALLY SIMILAR TO FORM OSHA-20)

SEE IMPORTANT NOTICE ON BOTTOM OF OTHER SIDE

24 Hour Emergency Phone (316) 524-5751

### I - PRODUCT IDENTIFICATION

|  |   |
|--|---|
| MANUFACTURER'S NAME AND ADDRESS<br>Vulcan Materials Company, Chemicals Division, P. O. Box 7689, Birmingham, AL 35253-0689 |   |
| CHEMICAL NAME<br>1,1,1-Trichloroethane, Methyl Chloroform  | CHEMICAL FORMULA<br>$\text{CH}_3\text{CCl}_3$ |
| TRADE NAME AND SYNONYMS<br>Solvent 111®  | CHEMICAL FAMILY<br>Chlorinated Hydrocarbon    |
| CAS REGISTRY NO.<br>71-55-6  | DOT IDENTIFICATION NO.<br>UN 2831             |

### II - HAZARDOUS INGREDIENTS

| MATERIAL OR COMPONENT              | % (wt) | PEL (Units) |
|------------------------------------|--------|-------------|
| 1,1,1 Trichloroethane (stabilized) | 100    | 350ppm      |

### III - PHYSICAL DATA

|  |   |
|--|---|
| BOILING POINT (°F.)<br>162-190°F         | SPECIFIC GRAVITY ( $\text{H}_2\text{O}=1$ )<br>1.3                |
| VAPOR PRESSURE (mm Hg.)<br>@20°C 100     | PERCENT, VOLATILE BY VOLUME (%)<br>100                            |
| VAPOR DENSITY (AIR=1)<br>4.6             | EVAPORATION RATE (ether=1)<br>0.4                                 |
| SOLUBILITY IN WATER<br>0.07g/100g @ 25°C | APPEARANCE AND ODOR<br>Colorless clear liquid; mildly sweet odor. |

### IV - FIRE AND EXPLOSION HAZARD DATA

|  |  |
|--|--|
| FLASH POINT (Method used)<br>None (TOC)  | FLAMMABLE LIMITS in air @ 25°C<br>Lower 7.5% (vol) Upper 15.0% (vol) |
| EXTINGUISHING MEDIA<br>Foam, Dry Chemical, Carbon dioxide  |  |
| SPECIAL FIRE FIGHTING PROCEDURES<br>Self-contained breathing apparatus should be used in areas where 1,1,1-trichloroethane is stored.          |  |
| UNUSUAL FIRE AND EXPLOSION HAZARDS Concentrated vapors can be ignited by high intensity heat source. Decomposition produces hydrogen chloride. |  |

### V - REACTIVITY DATA

|   |                |   |  |
|---|----------------|---|--|
| STABILITY   | UNSTABLE       |   | CONDITIONS TO AVOID                                    |
|   | STABLE         | X | Contact with open flame, hot surfaces or electric arcs |
| INCOMPATIBILITY (Materials to avoid)<br>Strong alkalis, oxidizing materials     |                |   |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br>Hydrogen chloride, phosgene (small amounts) |                |   |  |
| HAZARDOUS POLYMERIZATION  | MAY OCCUR      |   | CONDITIONS TO AVOID<br>MK096005                        |
|   | WILL NOT OCCUR | X | None   |

| VI - HEALTH HAZARD DATA   |   |
|---|---|
| OSHA PERMISSIBLE EXPOSURE LIMIT   | 350 ppm 8 hour TWA. (29 CFR part 1910.1000) |
| ACGIH: 350 ppm 8 hour TLV; 450 ppm 15 min STEL.   |   |
| EFFECTS OF OVEREXPOSURE   |   |
| <b>INHALATION:</b><br>Major route of exposure - low systemic toxicity; acute exposures in the 1000 ppm range cause narcosis. Overexposure can cause dizziness, drunkenness and drowsiness, unconsciousness and even death at extreme doses. |   |
| <b>SKIN CONTACT/ABSORPTION:</b><br>Prolonged or repeated skin contact can cause dermatitis through defatting of skin. Absorption through skin is not a significant route of exposure - mildly irritating on contact.                        |   |
| <b>INGESTION:</b><br>Unlikely route of exposure, ingestion of small quantities is not likely to be toxic.   |   |
| <b>EYES:</b><br>Mild irritation, but no corneal injury likely. May cause conjunctivitis.  |   |
| EMERGENCY AND FIRST AID PROCEDURES  |   |
| <b>EYES AND SKIN</b><br>Remove contaminated clothing and flush exposed areas with water for 5 to 15 minutes.  |   |
| <b>INHALATION</b><br>Remove to fresh air. If breathing has stopped, administer respiration or oxygen if available.  |   |
| <b>INGESTION</b><br>Do not induce vomiting. Call physician and obtain medical attention.  |   |

| VII - SPILL OR LEAK PROCEDURES   |
|--|
| <b>STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED</b><br>Evacuate the area, ventilate, avoid breathing vapors, contain spill. Clean up area (wear protective clothing) by mopping or with absorbent material, transfer to closed container.                         |
| <b>WASTE DISPOSAL METHOD</b> Recovered liquids may be sent to a licensed reclaimer or incinerated. Contaminated absorbent material must be disposed of in a permitted waste management facility. Consult federal, state or local disposal authorities for approved procedures. |

| VIII - SPECIAL PROTECTION INFORMATION                                       |
|---|
| <b>SPECIFIC PERSONAL PROTECTIVE EQUIPMENT</b>                               |
| <b>RESPIRATORY</b> None required when used with adequate ventilation.       |
| <b>EYE</b> Chemical safety goggles. Contact lenses should not be worn.      |
| <b>SKIN</b> Neoprene, viton, polyvinyl alcohol coated gloves or equivalent. |
| <b>OTHER</b> Protective headgear & apron when splashing is a problem.       |
| <b>VENTILATION REQUIREMENTS</b><br>Sufficient to maintain below PEL.        |

| IX - SPECIAL PRECAUTIONS  |
|---|
| <b>PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING</b> Avoid contact with skin & avoid breathing vapors. Pipe vents outdoors. Store in cool, dry, ventilated area. Vapors are heavier than air and will collect in low areas.                             |
| MK096006  |
| <b>OTHER PRECAUTIONS</b><br>Prevent moist air from entering storage. No smoking in presence of vapors.<br>Contact with aluminum parts in a pressurizable fluid system may cause violent reactions.<br>Consult equipment supplier for further information. |

DATE September 1982

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VMC 3239

MKIL192709



**SECTION 1. MATERIAL IDENTIFICATION**

20

**MATERIAL NAME:** METHYL ETHYL KETONE

**OTHER DESIGNATIONS:** MEK, Butanone, 2-Butanone, Ethyl Methyl Ketone,  $\text{CH}_3\text{COCH}_2\text{CH}_3$ , ASTM D740, CAS #0078-93-3

**MANUFACTURER/SUPPLIER:** Available from many suppliers, including:  
 Ashland Chemical Company, Industrial Chemicals & Solvents Div., PO Box 2219, Columbus, OH 43216;  
 Telephone: (614) 889-3844



**HMIS**  
 H: 1  
 F: 3  
 R: 1  
 PPE\*

\*See sect. 8

**SECTION 2. INGREDIENTS AND HAZARDS**

%

**HAZARD DATA**

Methyl Ethyl Ketone; ( $\text{C}_4\text{H}_8\text{O}$ )

ca 100

8-hr TWA 200 ppm\* or  
 590 mg/m<sup>3</sup>

Human, Inhalation TCLo:  
 100 ppm/5 min.

Rat, Oral, LD<sub>50</sub>:  
 2.7 g/kg

Rabbit, Skin, LD<sub>50</sub>:  
 13 g/kg

\* Current OSHA PEL and ACGIH (1985-86) TLV.  
 NIOSH (1978) proposed a 10-hr TWA of 200 ppm.

**SECTION 3. PHYSICAL DATA**

Boiling Point, 1 atm ... 176 F (80°C)  
 Vapor Pressure @ 20°C ... 72  
 Vapor Density (Air = 1) ... 2.5  
 Viscosity @ 25°C, cp ... 0.40  
 Solubility in Water @ 20°C, wt. % ... 27.1

Specific Gravity (20/4°C) ... 0.805  
 Volatiles, vol. % ... ca 100  
 Evaporation Rate (BuAc = 1) ... 5.7  
 Freezing Point ... -122.8°F (-86°C)  
 Molecular Weight ... 72.12

**Appearance and odor:** Colorless liquid with a moderately sharp, fragrant, mintlike odor. Unfatigued, odor recognition threshold (100% of test panel) is 6-10 ppm.

**SECTION 4. FIRE AND EXPLOSION DATA**

**LOWER**

**UPPER**

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

20°F (-6.7°C) CC

960°F (516°C)

% by Vol.

1.5

10.0

**EXTINGUISHING MEDIA:** Dry chemical, carbon dioxide, alcohol foam, water spray. Use water spray to disperse vapors and to flush spills away from exposures. A stream of water can scatter flames. Water may be ineffective in extinguishing fire but should be used to help control fire and keep fire-exposed containers cool. Methyl ethyl ketone is a dangerous fire hazard and a moderate explosion hazard when exposed to heat or flame. Vapors can flow along surfaces to a distant ignition source and flash back.

Fire fighters should wear self-contained breathing apparatus in enclosed areas.

**SECTION 5. REACTIVITY DATA**

Methyl ethyl ketone is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not polymerize.

This material is an OSHA Class IB Flammable Liquid. It is incompatible with oxidizing agents that can cause spontaneous ignition and violent reaction. Ignition is caused by reaction with potassium t-butoxide.

Thermal-oxidative degradation products can include carbon monoxide, carbon dioxide, and various hydrocarbons.

MEK can attack many plastics, resins, and rubber.

## SECTION 6. HEALTH HAZARD INFORMATION | TLV

Methyl ethyl ketone is not listed as a carcinogen by the NTP, IARC, or OSHA. Inhalation of methyl ethyl ketone vapors can irritate the eyes, nose, and respiratory tract. Exposure to high concentrations will produce headache; dizziness; and, in extreme cases, unconsciousness. It can have a narcotic effect; however, its irritancy will often preclude exposure to narcotic concentrations. Prolonged or repeated skin contact may cause drying, cracking, irritation, and dermatitis. Eye contact may cause irritation and burning sensations. Ingestion can irritate the digestive tract; ingestion of several ounces can cause narcosis and acidosis.\*\*

**FIRST AID: SKIN CONTACT:** Wash area of contact with soap and water. Remove contaminated clothing immediately.

**EYE CONTACT:** Immediately wash with plenty of water, including under the eyelids. If irritation persists, get medical attention.

**INHALATION:** Remove victim to fresh air. If required, restore breathing. Keep warm and at rest. Get immediate medical attention!

**INGESTION:** If victim is conscious and medical help is not readily available, give him 3 glasses of water or milk to drink to induce vomiting. Get medical help as soon as possible\* with special attention to acidosis.\*\*

\* GET MEDICAL ASSISTANCE - In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid, if indicated.

\*\* P.G. Kopelman, "Severe Metabolic Acidosis After Ingestion of Butanone," *Brit. Med. J.* 286 (1986):21

## SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel and implement containment procedures. Remove all sources of heat or ignition. Provide optimum (explosion-proof) ventilation.

Cleanup personnel should use protection against inhalation of vapors and contact with liquid. Use foam to control vapors.

Contain spills using absorbent material (dry sand or vermiculite). Use nonsparking tools. Mix well and place in appropriate container for disposal. Flush trace residues with much water. Do not flush to sewers or open waterways.

**DISPOSAL:** Waste may be burned in an approved incinerator or disposed of by a licensed disposal firm. Follow Federal, state, and local regulations.

EPA Hazardous Waste No. U159 (40 CFR 261); the primary hazardous properties of MEK are ignitability and toxicity (40 CFR 261.33).

## SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust fume ventilation to meet TLV requirements. Exhaust hoods should have a minimum velocity of 100 fpm (linear feet per minute). Exhaust fans and other electrical services must be of explosion-proof construction.

For emergency and nonroutine work above the TLV an approved, full-facepiece, organic-vapor, canister gas mask is recommended; but for unknown concentrations or those above or about 3000 ppm, self-contained or air-supplied respirators (positive pressure) are needed.

Use chemical safety goggles where liquid contact with the eyes is possible. Do not use contact lenses when working with solvents; soft lenses may absorb irritants and all lenses concentrate them. Use impervious gloves. Where splashing may occur, use a face shield, apron, and other protective clothing as needed to prevent skin contact. An eyewash station must be available near the workplace. A safety shower is desirable when large amounts of this material are used. Methyl n-butyl ketone has caused neurotoxic effects, and studies have shown that MEK may trigger these effects. (K. Saida, et al., *J. Neuropathology and Exp. Neurology* 35 [May 1976]: 207).

## SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in a clean, cool, well-ventilated area away from heat, ignition, and oxidizing agents. Containers should be electrically interconnected and grounded for liquid transfers to prevent static sparks. Storage and use areas should be No Smoking areas.

Use nonsparking tools. Small amounts should be handled in approved safety cans with proper labeling. Emptied containers may retain hazardous product residues (vapor or liquid). Electrical services must meet code requirements.

Avoid skin and eye contact. Avoid breathing vapors. Do not ingest. Avoid contact with copper or copper-bearing materials.

Wash thoroughly after handling.

DOT Classification: Flammable Liquid

ID No.: UN1193

Label: Flammable Liquid

Data Source(s) Code: 1-9, 12, 14, 19-21, 23, 26, 27, 34, 38, 47, 52, 54. CK

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Approvals Joseph O. DeSole, 11/86.

Indust. Hygiene/Safety

Medical Review

# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION  
1145 CATALYN STREET  
SCHENECTADY, NY 12303-1836 USA  
(518) 377-8855



No. 6

HYDROFLUORIC ACID,  
ANHYDROUS

Revision B

Date May 1981

## SECTION I. MATERIAL IDENTIFICATION

**MATERIAL NAME:** HYDROFLUORIC ACID, ANHYDROUS  
**DESCRIPTION:** This material is a low boiling, hazardous liquid which is usually shipped in sealed steel pressure containers.  
**OTHER DESIGNATIONS:** Hydrogen Fluoride, HF, Anhydrous Hydrogen Fluoride, Anhydrous HF, AHF, HF-A, CAS #007 664 393  
**MANUFACTURER:** Available from many suppliers, including:  
E.I. duPont de Nemours  
Wilmington, DE 19898  
Emergency Telephone: (302) 774-2421

## SECTION II. INGREDIENTS AND HAZARDS

|   | X        | HAZARD DATA   |
|---|----------|---|
| Hydrogen fluoride (HF)  | 99.0 min | TLV 3 ppm* or<br>2 mg/m <sup>3</sup><br><br>Man, Inhalation<br>TCLo 110 ppm/1 min<br>(Systemic, Irritant<br>Effects)<br><br>Human, Inhalation<br>LCLo 50 ppm/30 min |
| <p>*Current OSHA standard and ACGIH (1980) TLV.<br/>NIOSH recommends a 10-hr TWA of 2.5 mg/m<sup>3</sup> and a ceiling level of 5.0 mg/m<sup>3</sup> (15 minute sample)<br/><br/>TLV set at a level to minimize irritation of eyes and nose and to prevent fluorosis.</p> |          |   |

## SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg F (C) 67.1 (19.5)      Specific gravity (25/4 C) - 0.97  
Vapor pressure at 20 C ----- 775 mm Hg      Volatiles, % ----- ca 100  
Vapor density (Air=1) ----- Variable\*      Solubility in H<sub>2</sub>O ----- Complete  
Freezing point ----- -118 F (-83 C)  
  
Appearance & Odor: Colorless, or nearly colorless, fuming liquid or gas with a pungent, irritating odor; perceptible by smell above about 5 ppm in air. Overexposed if odor detected.  
\*Vapor density @ 21 C is ca 2.1; @60 C is ca 0.7. Vapor phase HF molecules "clump together" at low temperature and dissociate as the temperature increases.

## SECTION IV. FIRE AND EXPLOSION DATA

|  | LOWER              | UPPER                      |
|--|--------------------|----------------------------|
| Flash Point and Method   | Autoignition Temp. | Flammability Limits In Air |
| Nonflammable   | N/A                | N/A                        |
| <p>Extinguishing Media: Water or carbon dioxide. Keep upwind of fire.<br/>Hydrogen fluoride itself is nonflammable, but in this concentrated form it can attack certain metals, i.e. yellow brass, lead, stainless steel, aluminum, cast iron, etc. and release explosive hydrogen gas from the chemical reaction. Moisture contamination may also facilitate hydrogen generation.<br/>Respiratory and body protection is required for fighting fires in which this material is involved. Also provide eye protection.</p> |                    |                            |

## SECTION V. REACTIVITY DATA

HF is stable when stored and used under proper conditions. Hazardous polymerization will not occur. It is hygroscopic, with a high heat release as an acid solution is formed with water. Water contamination of pressurized containers or piping systems could allow hydrogen generation by acid attack on metal. AHF will attack glass, concrete, certain metals, silica containing materials, natural rubber, leather and many organics. Arsenic trioxide and AHF react with incandescence. Phosphorous pentoxide reacts vigorously with HF, even at 19.5 C. When it reacts with silica, SiF<sub>4</sub>, a hazardous colorless gas, is produced. Reaction with cyanides, sulfides, may release poisonous cyanide or hydrogen sulfide gas. Does not corrode wax, polyethylene or platinum.

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|   |  |                                  |
|---|--|----------------------------------|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>  |  | TLV 3 ppm or 2 mg/m <sup>3</sup> |
| <p>HF is not detected by smell at 3 ppm but is immediately irritating to mucous membranes at over 5 ppm. Inhalation of vapors can cause extreme irritation of respiratory tract, pulmonary edema, congestion, and fluorosis. Breathing 50 ppm for 30-60 min. may be fatal. Eye contact can cause permanent damage. Skin contact gives immediate burns that intensify with continued contact. Ingestion unlikely, but could result in tissue destruction of the digestive tract and severe irritation in the respiratory tract.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Immediately flush with water for 15 min, including under eyelids.*</p> <p><u>Skin Contact:</u> Wash acid from the skin. Remove contaminated clothing. Continue washing 2-4 hours with water; or preferably if available, soak in iced zephiran (0.13%), epsom salt, or 70% denatured ethyl alcohol solution for 1-4 hours, depending on severity of burns.*</p> <p><u>Inhalation:</u> Immediately remove to fresh air. Administer 100% oxygen and repeat at half-hour intervals.*</p> <p><u>Ingestion:</u> Do not induce vomiting. Give large quantities of milk or water with milk of magnesia.*</p> <p>*Get medical attention promptly for all affected persons.<br/>First aid procedures should be planned before beginning work with HF.</p> |  |                                  |
| <b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>  |  |                                  |
| <p>Notify safety personnel, provide adequate ventilation, and remove ignition sources since hydrogen may be generated by reactions with metals.</p> <p>HF vapor should be passed through a packed tower scrubber. Spills should be covered with lime to form a slurry.</p> <p><b>DISPOSAL:</b> The neutralized slurry can be scraped up for disposal in an approved landfill. Liquid wastes may be neutralized in a trench with lime in a remote location away from buildings and people. Then fill the trench with earth and cover with lumber or sheet metal until the earth settles. Follow Federal, State, and Local regulations.</p> <p><b>NOTE:</b> Porous materials (concrete, wood, plastic, etc.) will absorb AHF and become a hazard for an indefinite time. Such spills to be cleaned and neutralized immediately.</p>   |  |                                  |
| <b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>   |  |                                  |
| <p>Exhaust hoods should be a non-corrosive construction, with a face velocity minimum of 100 fpm. Respirators should be available for nonroutine and emergency use above the TLV. An air-supplied respirator or a self-contained breathing apparatus with full facepiece is recommended when vapors/fumes are below 20 ppm.</p> <p>Wear protective clothing, including boots or safety shoes with polyvinyl chloride (PVC) neoprene or composition soles; chemical goggles and/or a full face shield; coveralls with long sleeves; gauntlets and gloves of PVC or neoprene. A high degree of protection obtained with an air-inflated suit with mask and safety belt. Protective clothing not to be worn or carried beyond operation areas. Use protection suitable for conditions.</p> <p>Chemical showers and eyewash stations to be readily available to areas of use. Immediately shower with copious amounts of water within seconds after contact, and completely remove all clothing while in shower.</p> <p>Contact with dilute HF solutions (below 20% in water) may not produce immediate pain or visible damage; but after several hours, the burns will be manifest.</p>  |  |                                  |
| <b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>   |  |                                  |
| <p>Maintain adequate ventilation. Use forced draft ventilation and scrubbers for fume control. Keep containers tightly closed. Storage facilities to be constructed for containment and dilution/neutralization of spills.</p> <p>Use nonsparking tools around tanks &amp; pipes where hydrogen gas may collect.</p> <p>Handling and storage of AHF requires special materials technology for containers, pipes, valves, gaskets, etc., which is available from suppliers. Mild steel resists AHF up to 150 F; PTFE plastic, up to 500 F.</p> <p>Do not inhale HF mists or vapors! Preclude from exposure workers with kidney disease, osteofluorosis, or impaired pulmonary function.</p>  |  |                                  |
| DOT Classification - CORROSIVE MATERIAL.  |  | I.D. No. UN1052                  |
| DATA SOURCE(S) CODE: 1-11,17,20,26,31,37,38,43  |  | APPROVALS: MIS<br>CRD            |
| <small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corporation extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small>  |  | Industrial Hygiene<br>and Safety |
|   |  | MEDICAL REVIEW: 30 May 1981      |

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# MATERIAL SAFETY DATA SHEET

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(518) 377-8855



No. 466

n-HEPTANE

Date September 1981

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: n-HEPTANE

OTHER DESIGNATIONS: Heptane, CAS 000 142 825,  $\text{CH}_3(\text{CH}_2)_5\text{CH}_3$

MANUFACTURER: Available from several suppliers.

## SECTION II. INGREDIENTS AND HAZARDS

n-Heptane

99

### HAZARD DATA

8-hr TWA 400 ppm or  
1,600  $\text{mg}/\text{m}^3$ \*

\*ACGIH (1981) TLV. The current OSHA standard is 500 ppm or 2,000  $\text{mg}/\text{m}^3$ . In 1977 NIOSH proposed a 10-hr TWA of 350  $\text{mg}/\text{m}^3$  for all alkanes. (ca. 85 ppm for heptane). This is not expected to become an OSHA standard.

Human, Inhalation  
TCLo 1000 ppm/6M  
TFX:CNS

Mouse, Intravenous  
LD50 222  $\text{mg}/\text{kg}$

## SECTION III. PHYSICAL DATA

|                             |           |                          |       |
|-----------------------------|-----------|--------------------------|-------|
| Boiling point, 1 atm, deg C | 98.4      | Specific gravity, 20/4 C | 0.684 |
| Vapor pressure, 25 C, mmHg  | 47.7      | Melting point, deg C     | -90.5 |
| Vapor Density (Air=1)       | 3.45      | Molecular weight         | 100.2 |
| Solubility in water         | Insoluble |                          |       |

Appearance and Odor: Volatile, colorless liquid. Has a mild, gasoline-like odor.

## SECTION IV. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits In Air | LOWER | UPPER |
|------------------------|--------------------|----------------------------|-------|-------|
| 25 F (CC)              | 433 F              | Vol %                      | 1.1   | 6.7   |

Extinguishing Media: Dry chemical, carbon dioxide, alcohol foam, water spray. The use of water may be ineffective as an extinguishing agent, but a water spray should be used to keep fire-exposed containers cool. This flammable liquid is a dangerous fire hazard and it is a dangerous explosion hazard when heated.

Firefighters should wear self-contained breathing apparatus and full protective clothing.

## SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization.

Incompatible with strong oxidizing agents.

A violent reaction occurs when liquid chloride in heptane is added to red phosphorus at 0°C.

Thermal-oxidative degradation may produce oxides of carbon.

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|   |  |
|---|--|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>  | TLV  |
| <p>Excessive inhalation can cause irritation and CNS depression. Exposure to 5,000 ppm for four minutes can cause marked vertigo, inability to walk a straight line, "giddiness" and muscular incoordination; after 15 minutes of exposure, a state of stupor can occur with loss of appetite, nausea, and a lingering gasoline-like taste in the mouth. Narcosis occurs at higher exposures. Repeated or prolonged liquid contact with skin causes defatting and possible dermatitis.</p> <p><b>FIRST AID:</b><br/> <u>Eye Contact:</u> Flush with running water for 15 min. including under the eyelids.<br/> <u>Skin Contact:</u> Remove contaminated clothing. Wash affected area with soap and water.<br/> <u>Inhalation:</u> Remove to fresh air. Restore and/or support breathing as needed.<br/> <u>Ingestion:</u> Aspiration of the liquid is a hazard. Do not induce vomiting.<br/>         Seek medical assistance for further treatment, observation and support.</p> |  |
| <b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>  |  |
| <p>Establish plans and provide training prior to any emergency situation. When spills occur exclude workers from area except those assigned to clean-up who must have proper protection against inhalation of vapors or contact with liquid. (see Sect. VIII). Provide maximum explosion-proof ventilation. Eliminate ignition sources. Flush away from sensitive areas with a cold water spray. (Flush to ground not to the sewer!) Small amounts of liquid (or absorbed liquid) can be allowed to evaporate with good ventilation or in a hood or open area; large spills should be picked up in a safe and appropriate manner for disposal.</p> <p><b>DISPOSAL:</b> Scrap material can be burned in an approved incinerator in accordance with Federal, State and local regulations. AQUATIC TOXICITY TLM96: &gt;1000 ppm</p>  |  |
| <b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>   |  |
| <p>Provide adequate general and local exhaust ventilation which is explosion-proof to meet TLV requirements. Processing this high flammable material may require an inert atmosphere.</p> <p>Approved respirators are needed for nonroutine and emergency use above the TLV. Use an air-supplied or self-contained breathing apparatus (or an approved vapor cartridge respirator when vapors/fumes are below 850 ppm).</p> <p>Wear chemical safety goggles where operations may cause splashing. Use impervious rubber gloves, aprons, boots and other suitable protective clothing to prevent prolonged or repeated skin contact. Protective apparel to be discarded at the first sign of deterioration.</p> <p>Eyewash stations and safety showers to be readily available near areas of use.</p>  |  |
| <b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>   |  |
| <p>Store in closed containers in a cool, dry, well-ventilated area away from oxidizing agents and sources of ignition. Protect containers from physical damage. Ground and bond containers from transfers to prevent static sparks. Storage and handling conditions must follow OSHA regulations for an OSHA class 1A flammable liquid. No smoking in area of storage or use.</p> <p>Avoid inhalation of vapors/fumes. Prevent prolonged or repeated skin contact. Preplacement exams and medical surveillance with emphasis on skin disorders and the nervous system is recommended. Exposure monitoring and recordkeeping requirements which have been proposed by NIOSH for alkanes should be instituted.</p> <p>DOT Classification: FLAMMABLE LIQUID EPA Hazardous Waste No D001 (40 CFR 261.21)</p>  |  |
| <p>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corporation extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</p>   | <p>DATA SOURCE(S) CODE: 2,4-12,16,23,25-26,31,37-38,47</p> <p>APPROVALS: MIS<br/>CRD <i>J. H. H. H.</i></p> <p>Industrial Hygiene<br/>and Safety <i>QW 7-25-81</i></p> <p>MEDICAL REVIEW: 8 October 1981</p> |

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# MATERIAL SAFETY DATA SHEET

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No. 391

VM&P NAPHTHA  
(Rule 66 Exempt)

Date September 1978

|   |                    |   |                                      |
|---|--------------------|---|--------------------------------------|
| <b>SECTION I. MATERIAL IDENTIFICATION</b>   |                    |   |                                      |
| <b>MATERIAL NAME:</b> VM&P NAPHTHA (Rule 66 Exempt)<br><b>DESCRIPTION:</b> Fast evaporating, narrow boiling range hydrocarbon solvent of limited aromatic and olefin content to meet photochemically reactive emission restrictions.<br><b>OTHER DESIGNATIONS:</b> GE Material D5B20A2 & C2, EXXON VM&P Naphtha, SHELL VM&P Naphtha EC, BORON Solvent VM&P 2429, DRAKE Special VM&P Naphtha (66), AMSCO Special Naphtholite.<br><b>MANUFACTURER:</b> Available from many sources, including: Exxon Co., USA, Shell Chemical Co. Standard Oil Co. of Ohio, Drake Petroleum Co., and Union Oil Co. of California.                                       |                    |   |                                      |
| <b>SECTION II. INGREDIENTS AND HAZARDS</b>  |                    | <b>X</b>                                  | <b>HAZARD DATA</b>                   |
| <u>Saturated Hydrocarbons</u><br>(Aliphatic and Cycloaliphatic or Naphthenic)<br><u>Aromatic Hydrocarbons plus Olefinic Hydrocarbons</u><br>Olefinics<br>Aromatics, C <sub>8</sub> and above (except Ethyl Benzene)<br>Typical Benzene content; (needs to be confirmed) **  |                    | > 80<br>< 20<br>< 5<br>< 8<br>< 0.1       | 8-hr TWA 200-300 ppm*<br>(estimated) |
| *Current OSHA TLV for Petroleum Distillates (naphtha) is 500 ppm. ACGIH (1977) placed VM&P Naphtha on its Intended Changes list at 300 ppm. Manufacturers have recommended 200 ppm TLV for the EXXON (10-15% aromatic) and the BORON (<1% aromatic) VM&P Naphthas. NIOSH has proposed a 10-hr TWA of 350 mg/m <sup>3</sup> (or about 78 ppm) with an <u>action level</u> of 200 mg/m <sup>3</sup> for typical 12% aromatic, 0.1% benzene VM&P Naphtha.<br>**Mixtures with less than 0.5% benzene are not subject to regulation as carcinogens until 1981, below 0.1% is regulation-free.  |                    |   |                                      |
| <b>SECTION III. PHYSICAL DATA</b>   |                    |   |                                      |
| Boiling range at 1 atm, deg C ----- 115-150   |                    | Specific gravity, 15.5/15.5 C -- ca 0.755 |                                      |
| Vapor pressure at 20 C, mm Hg ----- ca 20   |                    | Volatiles, % ----- ca 100                 |                                      |
| Vapor density (Air=1) ----- ca 4  |                    | Evaporation rate (BuAc=1) ----- ca 1.5    |                                      |
| Water solubility ----- Nearly Insol.  |                    |   |                                      |
| Appearance & Odor: A clear, nearly colorless, mobile liquid with a hydrocarbon odor.  |                    |   |                                      |
| <b>SECTION IV. FIRE AND EXPLOSION DATA</b>  |                    |   |                                      |
| Flash Point and Method  | Autoignition Temp. | Flammability Limits in Air                | LOWER UPPER                          |
| >40 F (TCC) **  | ca 450 F **        | Volume % (Approx.) **                     | 0.9 6.7                              |
| <b>Extinguishing Media:</b> Carbon dioxide, dry chemical, water fog. Use a smothering effect to put out fire. Water may not be effective in putting out fire, but it should be used to cool fire-exposed containers. Do not direct a stream of water into burning liquid, for it will scatter fire.<br><b>This material is a moderate explosion hazard and a dangerous fire hazard when exposed to heat or flame. This is an OSHA Class IB flammable liquid. Self-contained breathing apparatus should be available for fighting fire in enclosed areas.</b><br><b>** These properties will vary with the commercial product to a limited degree.</b> |                    |   |                                      |
| <b>SECTION V. REACTIVITY DATA</b>   |                    |   |                                      |
| <b>Material is stable in closed containers at room temperature. It does not polymerize.</b><br><b>It is a highly flammable material and must be kept away from heat, sparks, flames, and oxidizing agents (peroxides, chromates, nitric acid, chlorine and oxygen cylinders, for example).</b><br><b>Thermal-oxidative degradation can produce toxic vapors and gases, including carbon monoxide and carbon dioxide.</b>  |                    |   |                                      |

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|   |  |
|---|--|
| SECTION VI. HEALTH HAZARD INFORMATION   | TLV 200-300 ppm (See Sect. II)   |
| <p>Excessive inhalation of vapors can be irritating to the upper respiratory tract, and produce headache, dizziness, nausea, narcosis and coma, depending on the concentration and time of exposure. Eye contact with liquid is irritating. Excessive skin contact will defat the skin and cause irritation and dermatitis. Ingestion is toxic and irritating to the GI tract. It may result in spontaneous vomiting and possible aspiration of hydrocarbon into the lungs, producing pulmonary edema and difficult breathing.</p> <p><b>FIRST AID:</b></p> <p><u>Eye contact:</u> Flush eyes with plenty of running water for 10-15 minutes. If irritation persists, get medical attention.</p> <p><u>Skin contact:</u> Wash exposed areas with soap and water. Promptly remove contaminated clothing and shoes.</p> <p><u>Inhalation:</u> Remove to fresh air. Restore breathing if required. Get medical help.</p> <p><u>Ingestion:</u> Do <u>not</u> induce vomiting (aspiration hazard)! Give 1-2 tablespoons of vegetable oil. Obtain medical help immediately!</p> |  |
| <p><b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b></p> <p>Provide maximum explosion-proof ventilation. Remove ignition sources and oxidizing agents. Confine spill. Exclude persons from spill area who are not involved in clean-up. Safety personnel should be involved in handling large spills. Material may be flushed with cold water to ground (not to sewer!) to remove it from sensitive areas. Pick up spill for recovery or disposal. Personnel involved in clean-up should have protection against inhalation of vapors and contact with liquid. Non-sparking tools must be used.</p> <p><u>Disposal</u> - Waste material can be safely burned in an approved incinerator or disposed of via a licensed waste disposal company in accordance with Federal, State, and local regulations.</p>   |  |
| <p><b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b></p> <p>Provide general ventilation and local exhaust ventilation (explosion-proof equipment) to meet TLV requirements for use of this material. For emergency and non-routine conditions an approved organic cartridge respirator is suitable for use up to 3500 mg/m<sup>3</sup> (or about 780 ppm). Full face protection is needed above 3500 mg/m<sup>3</sup>; an approved gas mask with organic vapor canister is suitable up to 17,500 mg/m<sup>3</sup> (or about 3900 ppm). For unknown concentrations or those above 17,500 mg/m<sup>3</sup>, air-supplied or self-contained type respirators are required.</p> <p>Use impervious rubber or plastic gloves to limit skin contact when handling this solvent and safety goggles to prevent eye contact with liquid. A face shield, protective clothing, boots, etc. may also be required to limit skin contact where splashing of solvent is probable. An eyewash station and safety shower should be readily available where splashing may occur.</p>       |  |
| <p><b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b></p> <p>Store in tightly closed containers in a cool, well-ventilated area which is suitable for an OSHA Class IB liquid. Keep away from sources of heat, sources of ignition, and oxidizing agents. Protect containers against physical damage. Electrically bond and ground containers for liquid transfers to prevent static sparks. Use metal safety cans for small amounts of solvent. <u>No Smoking</u> in areas of storage, handling, or use of this material.</p> <p>Avoid repeated or prolonged contact with the skin. Avoid inhalation of mist or vapors. Remove solvent contaminated clothing promptly (fire hazard as well as health hazard) and do not reuse until solvent-free.</p>   |  |
| <p>DATA SOURCE(S) CODE: 1-4, 6, 7, 11, 12, 19</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corporation extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>  | <p>APPROVALS: MIS. <i>J. M. Nye</i><br/>CRD<br/>Industrial Hygiene and Safety <i>John White</i><br/>Corporate Medical Staff <i>Gary F. Martin MD</i></p> |

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# MATERIAL SAFETY DATA SHEET

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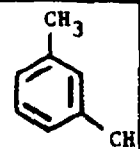
No. 3188

m-XYLENE

Date November 1980

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: m-XYLENE  
DESCRIPTION: An Aromatic Hydrocarbon  
OTHER DESIGNATIONS:  $C_6H_4(CH_3)_2$ , 1,3-Dimethylbenzene, m-Xylol,  
CAS #000 108 383  
MANUFACTURER: Available from many suppliers, including EXXON Company USA  
and Shell Chemical Company.



## SECTION II. INGREDIENTS AND HAZARDS

|  | %   | HAZARD DATA  |
|--|-----|--|
| Xylene (m-isomer)  | ~99 | 8-hr TWA 100 ppm (Skin)<br>or 435 mg/m <sup>3</sup>  |
| Other C <sub>7</sub> to C <sub>9</sub> Hydrocarbons*   | <1  | Rat, Oral<br>LD <sub>50</sub> 5000 mg/kg<br>Rat, inhalation<br>LCLo 8000 ppm/4-hr<br>Goldfish, LD <sub>50</sub><br>16 mg/L, 24 hrs<br>(ASTM D1345) |
| *Material may contain ethylbenzene (8-hr TWA 100 ppm) and traces of toluene, C <sub>9</sub> aromatic and aliphatic hydrocarbons.   |     |  |
| **Current OSHA standard and ACGIH (1980) TLV. NIOSH recommends a 10-hr workday, 40-hr workweek TWA of 100 ppm and a ceiling level of 200 ppm (10 min. sample). TLV set at a level to prevent irritant effects and CNS depression. Selected for mutagenicity & teratogenicity testing in FY 80 by EPA under TSCA. |     |  |

## SECTION III. PHYSICAL DATA

|                               |           |                           |        |
|-------------------------------|-----------|---------------------------|--------|
| Boiling point, deg C          | 139       | Specific gravity (25/4 C) | 0.860  |
| Vapor pressure at 25 C, mm Hg | 8.3       | Melting point, deg C      | -48    |
| Vapor density (Air=1)         | 3.7       | Molecular weight          | 106.17 |
| Solubility in Water           | Insoluble |                           |        |

Appearance and Odor: Clear, colorless liquid. Threshold odor concentration 3.7 ppm.

## SECTION IV. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air | LOWER | UPPER |
|------------------------|--------------------|----------------------------|-------|-------|
| 25 C (CC)              | 986 F              | %                          | 1.1   | 6.4   |

Extinguishing Media: Use dry chemical, foam, carbon dioxide. A water stream can scatter flames. A water spray may be used to cool fire-exposed containers. This flammable liquid is a dangerous fire hazard and a moderate explosion hazard when exposed to heat or flame. Heavier-than-air vapors can flow along surfaces to distant ignition sources and flash back. Firefighters should use self-contained breathing apparatus.

## SECTION V. REACTIVITY DATA

This material is stable in closed containers at room temperature. It does not polymerize. It is flammable (OSHA Class IC liquid) and can form explosive mixtures with air. Keep away from sources of heat, sources of ignition and strong oxidizing agents. Thermal-oxidative degradation in air can produce toxic vapors and gases, including carbon monoxide and oxides of nitrogen.

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|   |  |
|---|--|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>  | TLV 100 ppm or 435 mg/m <sup>3</sup>   |
| <p>Xylene is toxic by all portals of entry. It is an irritant of the eyes, mucous membrane, and skin; at high conc. it causes narcosis. Percutaneous absorption is slow and can cause a dermatitis attributed to its defatting properties with prolonged contact causing formation of vesicles. Acute exposure to its vapors may cause CNS depression and minor effects upon liver and kidney functions. Conc. &gt;200 ppm can cause anorexia, nausea, vomiting, dyspnea, vertigo, incoordination, and conjunctivitis. Very high conc. can cause chemical pneumonitis and pulmonary edema. Conc. of 10,000-30,000 ppm may produce anesthesia within one minute.</p> |  |
| <p><b>FIRST AID:</b></p>  |  |
| <p><u>Eye Contact:</u> Flush with running water for 15 minutes, including under eyelids.</p>  |  |
| <p><u>Skin Contact:</u> Wash with soap and water. Remove contaminated clothing promptly.</p>  |  |
| <p><u>Inhalation:</u> Remove to fresh air. Restore breathing if required.</p>   |  |
| <p><u>Ingestion:</u> Get medical attention immediately! Give white mineral oil demulcent and saline cathartic, but do not induce vomiting unless directed by a physician.</p>   |  |
| <p>Maintain observation of patient for possible delayed onset of pulmonary edema.</p>   |  |
| <p><b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b></p>   |  |
| <p>Notify safety personnel. Remove all ignition sources. Provide adequate ventilation. Use vermiculite or sand to absorb spill; scrape up with nonsparking tools and place in a covered metal container. The absorbed material may be burned in an open pit or placed in cardboard boxes and burned in an incinerator. Spilled liquid can be flushed away from sensitive locations with a water stream; flush to open area <u>not</u> to sewer!</p>   |  |
| <p><b>DISPOSAL:</b> Atomized into an approved incinerator, or disposed of via a licensed solvent disposal company, or Belliot process for oxidation destruction of gaseous organic cmpds (#20, pg 380). When large amounts are involved reclamation procedures may prove economical. Follow Federal, State, and Local regulations.</p>  |  |
| <p>May be toxic to aquatic life.</p>  |  |
| <p><b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b></p>  |  |
| <p>Provide general ventilation and efficient exhaust ventilation (explosion-proof equipment to meet TLV requirements and to control heavier-than-air vapors. Use &gt;100 lfpm face velocity for exhaust hoods. Respirators to be available for nonroutine or emergency use. Where fumes are &lt;1000 ppm, a chemical cartridge respirator with full facepiece and organic vapor canister is warranted; at &gt;10,000 ppm, a self-contained breathing apparatus with full facepiece operated in the positive pressure-demand mode is used. <b>CAUTION!</b> The lower explosive limit is approx. 11,000 ppm.</p>  |  |
| <p>Buna-N rubber gloves and aprons should be worn to prevent contact of xylene with the skin. Safety glasses or goggles should be used for eye protection and eyewash stations should be readily accessible to use areas.</p>   |  |
| <p>Comprehensive preplacement and biennial medical examinations to be directed toward, but not limited to, liver, kidney, gastrointestinal disorders, skin irritation, and the central nervous system.</p>  |  |
| <p><b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b></p>  |  |
| <p>Store in closed containers in a clean, cool, well-ventilated area, away from sources of heat, sources of ignition and strong oxidizing agents. Protect containers from physical damage. Bond and ground metal containers when transferring liquid. Use metal safety cans for small amounts. Use nonsparking tools for work in solvent areas. No Smoking in areas of use, storage, or manufacturing. Prevent skin contact and remove contaminated clothing promptly. Avoid repeated or prolonged breathing of vapor. Do not ingest!</p>   |  |
| <p>DATA SOURCE(S) CODE: 1-12, 19-21, 23, 26, 31, 34, 37-39</p>  | <p>APPROVALS: MIS<br/>CRD <i>J. M. Niles</i><br/>Industrial Hygiene<br/>and Safety <i>JW</i> 11-26-80<br/>MEDICAL REVIEW: December 5, 1980</p> |

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# Material Safety Data Sheet

Genium Publishing Corporation

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GENIUM PUBLISHING CORP.

No. 317  
TOLUENE  
(Revision D)

Issued: August 1979

Revised: April 1986

## SECTION 1. MATERIAL IDENTIFICATION

20

**MATERIAL NAME:** TOLUENE

HMIS

H: 2

F: 3

R: 0

PPE\*

\*See sect. 8



R 1

I 3

S 2

K 4

**OTHER DESIGNATIONS:** Methyl Benzene, Methyl Benzol, Phenylmethane, Toluol, C<sub>7</sub>H<sub>8</sub>, CAS #0108-88-3

**MANUFACTURER/SUPPLIER:** Available from many suppliers, including:  
Allied Corp., PO Box 2064R, Morristown, NJ 07960; Telephone: (201) 455-4400  
Ashland Chemical Co., Industrial Chemicals & Solvents Div., PO Box 2219,  
Columbus, OH; Telephone: (614) 889-3844

## SECTION 2. INGREDIENTS AND HAZARDS

%

### HAZARD DATA

Toluene



ca 100

8-hr TLV: 100 ppm, or  
375 mg/m<sup>3</sup> (Skin)\*\*

Man, Inhalation, TCLo:  
100 ppm: Psychotropic\*\*\*

Rat, Oral, LD<sub>50</sub>: 5000 mg/kg

Rat, Inhalation, LCLo:

4000 ppm/4 hrs.

Rabbit, Skin, LD<sub>50</sub>: 14 gm/kg

Human, Eye: 300 ppm

- Current (1985-86) ACGIH TLV. The OSHA PEL is 200 ppm with an acceptable ceiling concentration of 300 ppm and an acceptable maximum peak of 500 ppm/10 minutes.
- \*\* Skin designation indicates that toluene can be absorbed through intact skin and contribute to overall exposure.
- \*\*\* Affects the mind.

## SECTION 3. PHYSICAL DATA

Boiling Point ... 231°F (111°C)

Vapor Pressure @ 20°C, mm Hg ... 22

Water Solubility @ 20°C, wt. % ... 0.05

Vapor Density (Air = 1) ... 3.14

Evaporation Rate (BuAc = 1) ... 2.24

Specific Gravity (H<sub>2</sub>O = 1) ... 0.866

Melting Point ... -139°F (-95°C)

Percent Volatile by Volume ... ca 100

Molecular Weight ... 92.15

**Appearance and odor:** Clear, colorless liquid with a characteristic aromatic odor. The odor is detectable to most individuals in the range of 10 to 15 ppm. Because olfactory fatigue occurs rapidly upon exposure to toluene, odor is not a good warning property.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

40°F (4°C) CC

896°F (480°C)

% by Volume

1.27

7.1

**EXTINGUISHING MEDIA:** Carbon dioxide, dry chemical, alcohol foam. Do not use a solid stream of water because the stream will scatter and spread the fire. Use water spray to cool tanks/containers that are exposed to fire and to disperse vapors.

**UNUSUAL FIRE/EXPLOSION HAZARDS:** This OSHA class IB flammable liquid is a dangerous fire hazard. It is a moderate fire hazard when exposed to oxidizers, heat, sparks, or open flame. Vapors are heavier than air and may travel a considerable distance to an ignition source and flash back.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Fire fighters should wear self-contained breathing apparatus with full facepiece operated in a positive-pressure mode when fighting fires involving toluene.

## SECTION 5. REACTIVITY DATA

**CHEMICAL INCOMPATIBILITIES:** Toluene is stable in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization. This material is incompatible with strong oxidizing agents, dinitrogen tetroxide, silver perchlorate, tetranitromethane, and uranium hexafluoride. Contact with these materials may cause fire or explosion. Nitric acid and toluene, especially in the presence of sulfuric acid, will produce nitrated compounds that are dangerously explosive.

**CONDITIONS TO AVOID:** Avoid exposure to sparks, open flame, hot surfaces, and all sources of heat and ignition. Toluene will attack some forms of plastics, rubber, and coatings. Thermal decomposition or burning produces carbon dioxide and/or carbon monoxide.

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**SECTION 6. HEALTH HAZARD INFORMATION | TLV**

Toluene is not considered a carcinogen by the NTP, IARC, or OSHA. **SUMMARY OF RISKS:** Vapors of toluene may cause irritation of the eyes, nose, upper respiratory tract, and skin. Exposure to 200 ppm for 8 hours causes mild fatigue, weakness, confusion, lacrimation (tearing) and paresthesia (a sensation of prickling, tingling, or creeping on the skin that has no objective cause). Exposure to higher concentrations may cause headache, nausea, dizziness, dilated pupils, and euphoria, and, in severe cases, may cause unconsciousness and death. The liquid is irritating to the eyes and skin. Contact with the eyes may cause transient corneal damage, conjunctival irritation, and burns if not promptly removed. Repeated and/or prolonged contact with the skin may cause drying and cracking. It may be absorbed through the skin in toxic amounts. Ingestion causes irritation of the gastrointestinal tract and may cause effects resembling those from inhalation of the vapor. Chronic overexposure to toluene may cause reversible kidney and liver injury. **FIRST AID: EYE CONTACT:** Immediately flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention if irritation persists. **SKIN CONTACT:** Immediately flush skin (for at least 15 minutes) while removing contaminated shoes and clothing. Wash exposed area with soap and water. Get medical attention if irritation persists or if a large area has been exposed. **INHALATION:** Remove victim to fresh air. Restore and/or support breathing as required. Keep victim warm and quiet. Get medical help. **INGESTION:** Give victim 1 to 2 glasses of water or milk. Contact a poison control center. Do not induce vomiting unless directed to do so. Transport victim to a medical facility. Never give anything by mouth to a person who is unconscious or convulsing. **GET MEDICAL ASSISTANCE** - In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid, if indicated.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**SPILL/LEAK:** Notify safety personnel of large spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Limit access to spill area to necessary personnel only. Remove leaking containers to safe place if feasible. Cleanup personnel need protection against contact with liquid and inhalation of vapor (see sect. 8). **WASTE DISPOSAL:** Absorb small spills with paper towel or vermiculite. Contain large spills and collect if feasible, or absorb with vermiculite or sand. Place waste solvent or absorbent into closed containers for disposal using nonsparking tools. Liquid can be flushed with water to an open holding area for handling. Do not flush to sewer, watershed, or waterway. **COMMENTS:** Place in suitable container for disposal by a licensed contractor or burn in an approved incinerator. Consider reclaiming by distillation. Contaminated absorbent can be buried in a sanitary landfill. Follow all Federal, state, and local regulations. TLM 96: 100-10 ppm. Toluene is designated as a hazardous waste by the EPA. The EPA (RCRA) HW No. is U220 (40 CFR 261). The reportable quantity (RQ) is 1000 lbs/454 kg (40 CFR 117).

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Provide general and local exhaust ventilation to meet TLV requirements. Ventilation fans and other electrical service must be nonsparking and have an explosion-proof design. Exhaust hoods should have a face velocity of at least 100 fpm (linear feet per minute) and be designed to capture heavy vapor. For emergency or nonroutine exposures where the TLV may be exceeded, use an organic chemical cartridge respirator if concentration is less than 200 ppm and an approved canister gas mask or self-contained breathing apparatus with full facepiece if concentration is greater than 200 ppm. Safety glasses or splash goggles should be worn in all work areas. Neoprene gloves, apron, face shield, boots, and other appropriate protective clothing and equipment should be available and worn as necessary to prevent skin and eye contact. Remove contaminated clothing immediately and do not wear it until it has been properly laundered.

Eyewash stations and safety showers should be readily available in use and handling areas.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**STORAGE SEGREGATION:** Store in a cool, dry, well-ventilated area away from oxidizing agents, heat, sparks, or open flame. Storage areas must meet OSHA requirements for class IB flammable liquids. Use metal safety cans for handling small amounts. Protect containers from physical damage. Use only with adequate ventilation. Avoid contact with eyes, skin, or clothing. Do not inhale or ingest. Use caution when handling this compound because it can be absorbed through intact skin in toxic amounts. **SPECIAL HANDLING/STORAGE:** Ground and bond metal containers and equipment to prevent static sparks when making transfers. Do not smoke in use or storage areas. Use nonsparking tools. **ENGINEERING CONTROLS:** Preplacement and periodic medical exams emphasizing the liver, kidneys, nervous system, lungs, heart, and blood should be provided. Workers exposed to concentrations greater than the action level (50 ppm) should be examined at least once a year. Use of alcohol can aggravate the toxic effects of toluene.

**COMMENTS:** Emptied containers contain product residues. Handle accordingly!

Toluene is designated as a hazardous substance by the EPA (40 CFR 116). DOT Classification: Flammable liquid. UN1294.

Data Source(s) Code: 1-9, 12, 16, 20, 21, 24, 26, 34, 81, 82. CR

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Approvals *JO. Accascio, 11/96.*

Indust. Hygiene/Safety *DW 10-86*

Medical Review *SD Oct 86*

# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION  
1145 CATALYN STREET  
SCHENECTADY, NY 12303-1836 USA  
(518) 377-8855



No. 318C

p-XYLENE

Date November 1980

## SECTION I. MATERIAL IDENTIFICATION

**MATERIAL NAME:** p-XYLENE  
**DESCRIPTION:** An Aromatic Hydrocarbon  
**OTHER DESIGNATIONS:** C<sub>6</sub>H<sub>4</sub>(CH<sub>3</sub>)<sub>2</sub>, 1,4-Dimethylbenzene, p-Xylol,  
CAS #000 106 423  
**MANUFACTURER:** Available from many suppliers, including EXXON Company USA  
and Shell Chemical Company.



## SECTION II. INGREDIENTS AND HAZARDS

|  | X   | HAZARD DATA   |
|--|-----|---|
| Xylene (p-isomer)  | ~99 | 8-hr TWA 100 ppm (Skin)                                       |
| Other C <sub>7</sub> to C <sub>9</sub> Hydrocarbons*   | <1  | or 435 mg/m <sup>3</sup>                                      |
| *Material may contain ethylbenzene (8-hr TWA 100 ppm) and traces of toluene, C <sub>9</sub> aromatic and aliphatic hydrocarbons.                               |     | Rat, oral<br>LD <sub>50</sub> 5000 mg/kg                      |
| **Current OSHA standard and ACGIH (1980) TLV. NIOSH recommends a 10-hr workday, 40-hr workweek TWA of 100 ppm and a ceiling level of 200 ppm (10 min. sample). |     | Rat, inhalation<br>LCLo 4912 ppm/24-hr                        |
| TLV set at a level to prevent irritant effects and CNS depression. Selected for mutagenicity and teratogenicity testing in FY80 by EPA under TSCA.             |     | Goldfish, LD <sub>50</sub><br>18 mg/L, 24 hrs<br>(ASTM D1345) |

## SECTION III. PHYSICAL DATA

|                               |           |                           |        |
|-------------------------------|-----------|---------------------------|--------|
| Boiling point, deg C          | 138       | Specific gravity (25/4 C) | 0.857  |
| Vapor pressure at 25 C, mm Hg | 8.6       | Melting point, deg C      | 12-13  |
| Vapor density (Air=1)         | 3.7       | Molecular weight          | 106.17 |
| Solubility in water           | Insoluble |                           |        |

Appearance & Odor: Clear, colorless plates or prisms at low temp. A clear, colorless liquid at >13 C. Threshold odor concentration 0.47 ppm.

## SECTION IV. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air | LOWER | UPPER |
|------------------------|--------------------|----------------------------|-------|-------|
| 25 C (CC)              | 986 F              | %                          | 1.1   | 6.6   |

**Extinguishing Media:** Use dry chemical, foam, Carbon dioxide. A water stream can scatter flames. A water spray may be used to cool fire-exposed containers.  
This flammable liquid is a dangerous fire hazard and a moderate explosion hazard when exposed to heat or flame. Heavier-than-air vapors can flow along surfaces to distant ignition sources and flash back.  
Firefighters should use self-contained breathing apparatus.

## SECTION V. REACTIVITY DATA

This material is stable in closed containers at room temperature. It does not polymerize.  
It is flammable (OSHA Class IC liquid) and can form explosive mixtures with air. Keep away from sources of heat, sources of ignition and strong oxidizing agents. Thermal-oxidative degradation in air can produce toxic vapors and gases, including carbon monoxide and oxides of nitrogen.

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|  |   |                       |                    |                                  |                    |                                  |  |
|--|---|-----------------------|--------------------|----------------------------------|--------------------|----------------------------------|--|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>   | TLV 100 ppm or 435 mg/m <sup>3</sup>  |                       |                    |                                  |                    |                                  |  |
| <p>Xylene is toxic by all portals of entry. It is an irritant of the eyes, mucous membrane, and skin; at high conc. it causes narcosis. Percutaneous absorption is slow and can cause a dermatitis attributed to its defatting properties with prolonged contact causing formation of vesicles. Acute exposure to its vapors may cause CNS depression and minor effects upon liver and kidney functions. Conc. &gt;200 ppm can cause anorexia, nausea, vomiting, dyspnea, vertigo, incoordination, and conjunctivities. Very high conc. can cause chemical pneumonitis and pulmonary edema. Conc. of 10,000-30,000 ppm may produce anesthesia within one minute.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush with running water for 15 minutes, including under eyelids.</p> <p><u>Skin Contact:</u> Wash with soap and water. Remove contaminated clothing promptly.</p> <p><u>Inhalation:</u> Remove to fresh air. Restore breathing if required.</p> <p><u>Ingestion:</u> Get medical attention immediately! Give white mineral oil demulcent and saline cathartic, but <u>do not</u> induce vomiting unless directed by a physician.</p> <p>Maintain observation of patient for possible delayed onset of pulmonary edema.</p> |   |                       |                    |                                  |                    |                                  |  |
| <b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>   |   |                       |                    |                                  |                    |                                  |  |
| <p>Notify safety personnel. Remove all ignition sources. Provide adequate ventilation. Use vermiculite or sand to absorb spill; scrape up with nonsparking tools and place in a covered metal container. The absorbed material may be burned in an open pit or placed in cardboard boxes and burned in an incinerator. Spilled liquid can be flushed away from sensitive locations with a water stream; flush to open area <u>not</u> to sewer!</p> <p><b>DISPOSAL:</b> Atomized into an approved incinerator, or disposed of via a licensed solvent disposal company, or Belliot process for oxidation destruction of gaseous organic cmpds (#20, pg 380). When large amounts are involved reclamation procedures may prove economical. Follow Federal, State, and Local regulations.</p> <p>May be toxic to aquatic life.</p>  |   |                       |                    |                                  |                    |                                  |  |
| <b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>  |   |                       |                    |                                  |                    |                                  |  |
| <p>Provide general ventilation and efficient exhaust ventilation (explosion-proof equipment to meet TLV requirements and to control heavier-than-air vapors. Use &gt;100 lfm face velocity for exhaust hoods. Respirators to be available for nonroutine or emergency use. When fumes are &lt;1000 ppm, a chemical cartridge respirator with full facepiece and organic vapor canister is warranted; at &gt;10,000 ppm, a self-contained breathing apparatus with full facepiece operated in the positive pressure-demand mode is used. <b>CAUTION!</b> The lower explosive limit is approx. 11,000 ppm.</p> <p>Buna-N rubber gloves and aprons should be worn to prevent contact of xylene with the skin. Safety glasses or goggles should be used for eye protection and eyewash stations should be readily accessible to use areas.</p> <p>Comprehensive preplacement and biennial medical examinations to be directed toward, but not limited to, liver, kidney, gastrointestinal disorders, skin irritation, and the central nervous system.</p>  |   |                       |                    |                                  |                    |                                  |  |
| <b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>  |   |                       |                    |                                  |                    |                                  |  |
| <p>Store in closed containers in a clean, cool, well-ventilated area, away from sources of heat, sources of ignition and strong oxidizing agents. Protect containers from physical damage. Bond and ground metal containers when transferring liquid. Use metal safety cans for small amounts. Use nonsparking tools for work in solvent areas. No Smoking in areas of use, storage, or manufacturing.</p> <p>Prevent skin contact and remove contaminated clothing promptly. Avoid repeated or prolonged breathing of vapor. Do not ingest!</p>   |   |                       |                    |                                  |                    |                                  |  |
| <p>DATA SOURCE(S) CODE: 1-12, 19-21, 23, 26, 31, 34, 37-39</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore although reasonable care has been taken in the preparation of such information, Genium Publishing Company or its agents makes no representation and assumes no responsibility as to the accuracy or suitability of such information for application to any particular purpose or for consequences of its use.</small></p>  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">APPROVALS: MIS<br/>CRD</td> <td style="padding: 5px; text-align: center;"><i>J. M. Niles</i></td> </tr> <tr> <td style="padding: 5px;">Industrial Hygiene<br/>and Safety</td> <td style="padding: 5px; text-align: center;"><i>JW</i> 11-26-80</td> </tr> <tr> <td colspan="2" style="padding: 5px;">MEDICAL REVIEW: December 5, 1980</td> </tr> </table> | APPROVALS: MIS<br>CRD | <i>J. M. Niles</i> | Industrial Hygiene<br>and Safety | <i>JW</i> 11-26-80 | MEDICAL REVIEW: December 5, 1980 |  |
| APPROVALS: MIS<br>CRD  | <i>J. M. Niles</i>  |                       |                    |                                  |                    |                                  |  |
| Industrial Hygiene<br>and Safety   | <i>JW</i> 11-26-80  |                       |                    |                                  |                    |                                  |  |
| MEDICAL REVIEW: December 5, 1980   |   |                       |                    |                                  |                    |                                  |  |

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## SECTION 6. HEALTH HAZARD INFORMATION

TLV 750 ppm (see Section 2)

Acetone is a low toxicity solvent. Inhalation of small quantities of acetone vapors over long periods causes irritation of the respiratory tract, coughing and headache. Inhalation of acetone vapors in high concentrations produces dryness of the mouth and throat, dizziness, nausea, incoordinated movements, loss of coordinated speech, drowsiness, and in extreme cases, coma. Prolonged or repeated skin contact has a defatting effect causing drying, irritation, and mild dermatitis. Under normal circumstances, the amount of acetone that is absorbed through the skin is quite small. Although systemic injury is unlikely, possible skin absorption should be considered in meeting the TLV requirements. Vapors of acetone may cause eye irritation while the liquid will cause severe irritation and possibly eye damage. Ingestion of acetone may cause irritation of the gastrointestinal tract and narcosis. The TLV is set to prevent eye and respiratory irritation. **FIRST AID:** **EYE CONTACT:** Promptly flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention if irritation persists. **SKIN CONTACT:** Flush exposed skin with running water while removing contaminated clothing. Get medical attention if irritation persists or if exposure is severe. **INHALATION:** Remove to fresh air. Restore and/or support breathing if required. If effects are more severe than a headache, contact a physician. Consider oxygen therapy. **INGESTION:** Give victim milk or water. If victim is alert and large amounts have been ingested, induce vomiting by sticking finger to back of throat. Contact a physician or Poison Control Center.

## SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Notify safety personnel of large spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Evacuate all personnel from the area, except for those involved in clean-up. Remove leaking container to safe place, if feasible. Absorb small spills on paper towels or vermiculite, evaporate in a fume hood, and place in closed container for disposal. Flush large spills with water spray to clear area of acetone (flush to open ground, not to drains, sewers, or surface water courses) or dilute with >200 parts water and pick up with non-sparking tools for disposal.

**DISPOSAL:** Place in closed containers for disposal by licensed contractor or burn in an approved incinerator.

Reduce burning hazards by mixing acetone with a less flammable liquid. Consider reclaiming large quantities of waste acetone, if feasible. Follow all Federal, State and Local regulations.

Acetone is considered a hazardous waste by the EPA. The EPA (RCRA) HW No. is: U002 (40 CFR 261).

## SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation (explosion-proof) to meet TLV requirements. For emergency or nonroutine exposures where the TLV may be exceeded, use an approved chemical cartridge or canister, gas mask (up to 5000 ppm) or self-contained respirator with full face piece (up to 20,000 ppm). All electrical service in use or storage areas should have an explosion-proof design. Wear safety glasses and butyl rubber or natural rubber gloves to prevent liquid contact with the eyes and skin. Additional protective clothing and equipment (boots, apron, facemask, respirator) may be necessary to prevent exposure depending on work conditions. Remove contaminated clothing promptly and launder before reuse.

An eyewash station and safety shower should be available in use and handling areas. Sprinkler fire protection is desirable in areas of storage, handling and use.

NIOSH recommends preplacement and medical exams for those regularly exposed above "action level."

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

## SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers (carbon steel recommended) in a cool, dry, well-ventilated area away from oxidizing agents, heat, sparks, and open flame. Protect containers from physical damage. Use only with adequate ventilation. Avoid inhalation of vapors and repeated or prolonged contact with the skin. Do not eat or smoke in areas where acetone is being used or handled. Use non-sparking tools.

Ground and bond containers and equipment when transferring or pouring acetone to prevent static sparks.

Use labeled safety cans when handling small amounts of liquid. Consider storing under a nitrogen pad.

**DOT CLASSIFICATION:** Flammable liquid, UN1090 **DOT LABEL:** FLAMMABLE LIQUID

DATA SOURCE(S) CODE (See Glossary) 1-12, 14, 16, 19-21, 23-26, 31, 38, 47, 59, 79.R.

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APPROVALS

90 Approved 11/85

INDUST. HYGIENE/SAFETY

MEDICAL REVIEW:

Dec 85

# MATERIAL SAFETY DATA SHEET

## GENIUM PUBLISHING CORPORATION

1145 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854



MSDS # 3  
SODIUM HYDROXIDE  
Revision B

Issued: September, 1977  
Revised: August, 1985

From Genium's MSDS Collection, to be used as a reference.

### SECTION 1. MATERIAL IDENTIFICATION

17

**MATERIAL NAME:** SODIUM HYDROXIDE

**OTHER DESIGNATIONS:** Caustic Soda, Soda Lye, NaOH, CAS #1310-73-2

**MANUFACTURER:** Available from many suppliers including:

Dow Chemical USA, Inorganic Chemicals Dept.

2020 Dow Center

Midland, MI 48640

(517) 630-1000

Diamond Shamrock Co., Chlor-Alkali Div.

351 Phelps Court, Box 152300

Irving, TX 75015-2300

(800) 241-3134



### SECTION 2. INGREDIENTS AND HAZARDS

%

HAZARD DATA

**Typical content:**

Sodium Hydroxide (NaOH)

>96

Celling limit: 2 mg/m<sup>3</sup>\*

**IMPURITIES:**

Sodium Carbonate (Na<sub>2</sub>CO<sub>3</sub>)

0.5-2.5

Sodium Chloride (NaCl)

0.01-2.1

Skin, Rabbit:

Sodium Sulfate (Na<sub>2</sub>SO<sub>4</sub>)

0.02-0.1

50 mg/24H - Severe

Potassium, Calcium, Magnesium

0.1

irritation

Silicon Dioxide (SiO<sub>2</sub>)

0.03

Other metals (Total)

0.01

Eye, Rabbit:

\* Current (1985-86) ACGIH TLV. The current OSHA PEL is 2.0 mg/m<sup>3</sup> averaged over 8 hours.

0.05 mg/24H - Severe irritation

### SECTION 3. PHYSICAL DATA

Boiling Point, 1 atm ..... 1388°C

Volatiles ... non volatile @ room temperature

Melting point ..... 318°C

Water solubility, g/100cc:

Specific gravity (20/4°C) ..... 2.13

@ 0°C ..... 42

Vapor pressure, mmHg @ 739°C ... 1

@ 100°C ..... 347

Molecular weight ..... 40

**APPEARANCE & ODOR:** White or off-white hygroscopic solid. No odor.

**DESCRIPTION:** Anhydrous alkaline solid (flake, pellet, etc.)

### SECTION 4. FIRE AND EXPLOSION DATA

Lower

Upper

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

None - non combustible

N/A

N/A

N/A

N/A

Although this material is not combustible, it can be hazardous if present in a fire area. It can melt and flow when heated (m.p. 318°C). The hot or molten material can react violently with water (splattering) and can cause ignition of combustible materials. It can also react with certain metals, such as aluminum, to generate flammable hydrogen gas. (Also see Section 5).

Firefighters should wear self-contained breathing apparatus and full protective gear when fighting fires involving this material.

### SECTION 5. REACTIVITY DATA

This material is stable under normal conditions of storage and handling. It does not undergo hazardous polymerization nor does it evolve any hazardous decomposition products. It slowly absorbs moisture from the air and reacts with carbon dioxide from the air to form sodium carbonate.

Sodium hydroxide reacts violently with water, strong acids and with many organic chemicals, especially with nitrocarbons and chlorocarbons. It will react with trichloroethylene to form spontaneously flammable dichloroacetylene. Considerable heat is generated when it dissolves in water.

Avoid contact with leather and wool. Contact with aluminum, tin, zinc, and alloys that contain these metals causes the formation of hydrogen gas (flammable).

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**SECTION 6. HEALTH HAZARD INFORMATION**TLV (Ceiling limit)  $2\text{mg}/\text{m}^3$ 

Sodium Hydroxide is a strong alkali and is dangerous when improperly handled. It can be destructive to all human tissue it contacts, producing severe burns. Eye contact causes severe, permanent injury. Skin contact causes irritation and, if not removed immediately, severe burns with scarring. The effects of inhalation of the dust or mist vary from mild irritation to destructive burns. Pneumonitis may occur. Ingestion causes severe burns of the mouth, throat and stomach and may be fatal.

**FIRST AID:** **EYE CONTACT:** Wash eyes immediately with plenty of running water for no less than 15 minutes, including under the eyelids and all surfaces. Speed in rinsing out the eyes with water after contact is extremely important if permanent injury is to be avoided. Get medical attention promptly. **SKIN CONTACT:** Wash contaminated area promptly with large quantities of water. Remove contaminated clothing while washing. Prolong washing in serious cases until medical help arrives - even for an hour or longer. Physician should see all cases other than minor exposures to small areas of the skin. **INHALATION:** Remove from exposure to mist or dust and get prompt medical help. **INGESTION:** Immediately give person large quantities of water or milk to drink (never give anything by mouth to an unconscious person). DO NOT induce vomiting. Obtain medical assistance immediately.

**SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES**

Clean-up personnel should wear protective equipment to prevent skin and eye contact. Promptly shovel up spilled solid sodium hydroxide into suitable containers for reclaim. Avoid dust generation! Clean-up spills promptly as moisture absorption from air may make clean-up difficult. Flush contaminated surfaces with water and neutralize with dilute acid, preferably acetic acid, to remove final traces. Finally, rinse with water.

**DISPOSAL:** Waste caustic should never be discharged directly into drains, sewers or surface waters. Dilute well with water and carefully neutralize with acid. Follow all applicable Federal, State and local regulations.

EPA HAZARDOUS WASTE NUMBER: D002, corrosive (solns  $\bar{c}$  pH  $\geq$  12.5 - 40CFR261.22).

REPORTABLE SPILL QUANTITY: 1000 lbs (40CFR117).

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Provide adequate general and/or local exhaust ventilation to meet TLV requirements, especially where dusting or misting conditions can exist. Use a NIOSH approved respirator for dust/mist where needed.

Use chemical safety goggles. A plastic face shield in addition to safety goggles is also desirable where misting/splashing may occur. Use rubber gloves, rubber apron or protective suit, and rubber boots where needed to prevent contact with sodium hydroxide, especially when preparing solutions.

Eye wash stations and safety showers must be immediately available.

This is a special hazard to contact lenses wearers; soft lenses may absorb and all lenses concentrate irritants.

Contact between caustic and contact lenses will severely hamper contact lens removal due to the slippery nature of this caustic.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

Store in well-sealed containers in a dry location. Protect containers from physical damage. Avoid handling conditions that may lead to spills or leaks or the formation of mist or dust. Wherever this material is stored, unloaded, handled or used, abundant water (preferably running water) should be available for emergency use.

Drains servicing areas where this material is stored or used should have retention basins for pH adjustment and dilution of spills and flushings before discharge. Workers handling this material should be trained in proper handling and emergency procedures.

DOT HAZARD CLASSIFICATION: Corrosive Material

DOT LABEL: CORROSIVE

DOT ID NUMBER: UN1823

DATA SOURCE(S) CODE (See Glossary) 2, 4, 9, 11, 12, 27, 55, 58, MSDS 3 (rev. A), V.

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APPROVALS

INDUST. HYGIENE/SAFETY

MEDICAL REVIEW:

# Material Safety Data Sheet

From Genium's Reference Collection  
Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



No. 313

PERCHLOROETHYLENE  
(Revision D)  
Issued: November 1978  
Revised: August 1988

## SECTION 1. MATERIAL IDENTIFICATION

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**Material Name:** PERCHLOROETHYLENE

**Description (Origin/Uses):** Used in commercial dry cleaning and metal-degreasing operations; used to a lesser extent in home products and in veterinary anthelmintics (worming).

**Other Designations:** Ethylene Tetrachloride; Tetrachloroethylene;  $C_2Cl_4$ ; CAS No. 0127-18-4

**Manufacturer:** Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers Guide* (Genium ref. 73) for a list of suppliers.

HMIS

H 1

F 0

R 1

PPG\*

\*See sect. 8

2 0

0

R 1

I 3

S 2

K 0

NFPA

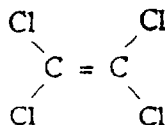
## SECTION 2. INGREDIENTS AND HAZARDS

%

## EXPOSURE LIMITS

Perchloroethylene, CAS No. 0127-18-4

Ca 100



\*See NIOSH, RTECS (No. KX3850000), for additional data with references to reproductive, irritative, tumorigenic, and mutagenic effects.

OSHA PEL

8-Hr TWA: 100 ppm

Ceiling: 200 ppm

Maximum Peak above the Ceiling: 300 ppm for 5 min. in any 3 Hrs

ACGIH TLVs, 1987-88

TLV-TWA: 50 ppm, 340 mg/m<sup>3</sup>

TLV-STEL: 200 ppm, 1340 mg/m<sup>3</sup>

Toxicity Data\*

Human, Inhalation, TC<sub>01</sub>: 96 ppm/7 Hrs

## SECTION 3. PHYSICAL DATA

**Boiling Point:** 250°F (121°C)

**Specific Gravity (H<sub>2</sub>O = 1):** 1.623

**% Volatile by Volume:** 100

**Water Solubility (%):** Insoluble

**Molecular Weight:** 166 Grams/Mole

**Vapor Pressure:** 19 Torr at 77°F (25°C)

**Vapor Density (Air = 1):** 5.83

**Appearance and Odor:** A clear, colorless liquid; ethereal odor.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temperature

Flammability Limits in Air

% by Volume

**Extinguishing Media:** \*Perchloroethylene does not burn. Use extinguishing agents that will put out the surrounding fire.

**Unusual Fire or Explosion Hazards:** Perchloroethylene vapor is heavier than air and it collects in low-lying areas such as sumps, wells, and underground piping systems. Enter these low-lying areas with appropriate caution.

**Special Fire-fighting Procedures:** Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Use care in selecting safety equipment (see sect. 5, Conditions to Avoid).

## SECTION 5. REACTIVITY DATA

Perchloroethylene is stable in closed containers during routine operations. It does not undergo hazardous polymerization.

**Chemical Incompatibilities:** Hazardous chemical reactions involving perchloroethylene and barium, beryllium, or lithium are reported in Genium reference 84, page 491M-208.

**Conditions to Avoid:** Prevent contact with incompatible chemicals. Avoid exposure to direct sunlight. Monitor the stabilizer level in the perchloroethylene product; get specifications from your supplier for the proper inhibitor levels. This material forms hydrochloric acid (HCl) if the inhibitor level becomes too low. Do not mix perchloroethylene with caustic soda or potash. This material may degrade or attack rubber and some plastics and coatings, so select protective gear and handling equipment carefully.

**Hazardous Products of Decomposition:** Although perchloroethylene itself does not burn, it can be very hazardous in fires because of thermooxidative degradation at high temperatures to very toxic phosgene and corrosive hydrogen chloride. Electric arcs and perchloroethylene vapor may also produce these products of hazardous decomposition.

**SECTION 6. HEALTH HAZARD INFORMATION**

Perchloroethylene is not listed as a carcinogen by the NTP, IARC, or OSHA.

**Summary of Risks:** Perchloroethylene affects the central nervous system (CNS), causing incoordination, headache, vertigo, light narcosis, dizziness, unconsciousness, and even death. All of these can occur as the level and duration of exposure continues.

**Medical Conditions Aggravated by Long-Term Exposure:** None reported. **Target Organs:** CNS, eyes, skin.  
**Primary Entry:** Inhalation, skin. **Acute Effects:** Irritation of the skin, eyes, and upper respiratory tract (URT); CNS effects.  
**Chronic Effects:** None reported.

**FIRST AID**

**Eyes:** Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes.

**Skin:** Immediately wash the affected area with soap and water.

**Inhalation:** Remove the exposed person to fresh air; restore and/or support his or her breathing as needed.

**Ingestion:** Never give anything by mouth to someone who is unconscious or convulsing. Do not induce vomiting.

**GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES.** Seek prompt medical assistance for further treatment, observation, and support after first aid.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**Spill/Leak:** Notify safety personnel, provide ventilation, and eliminate all sources of ignition immediately. Cleanup personnel need protection against contact with and inhalation of vapor (see sect. 8). Contain large spills and collect waste or absorb it with an inert material such as sand, earth, or vermiculite. Use nonsparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways. **Waste Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

**OSHA Designations**

Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste, No. U210

CERCLA Hazardous Substance, Reportable Quantity: 1 lb (0.454 kg), per Clean Water Act (CWA), section 307 (a) and Resource Conservation and Recovery Act (RCRA), section 3001

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**Goggles:** Always wear protective eyeglasses or chemical safety goggles. Where splashing of perchloroethylene solution may occur, wear a full face shield/splash guard. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Consult the NIOSH Pocket Guide to Chemical Hazards for general recommendations on respirator protection. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine use (e.g., cleaning reactor vessels or storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will not protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, and gauntlets, etc., to prevent prolonged or repeated skin contact with perchloroethylene. Suggested material includes polyvinyl alcohol, polyethylene, or neoprene. Leather shoes are also appropriate. **Ventilation:** Install and operate general and local ventilation systems that are powerful enough to maintain airborne levels of perchloroethylene dust below the OSHA PEL standard cited in section 2. **Safety Stations:** Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area. Avoid inhaling perchloroethylene vapor. Select safety equipment carefully (see sect. 5, Conditions to Avoid).

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**Storage/Segregation:** Store perchloroethylene in a cool, dry, well-ventilated area away from barium, beryllium, and lithium.

**Special Handling/Storage:** Protect containers from physical damage. Fit all holding tanks with an air-drying venting system that prevents moist air from entering the tank and allows for perchloroethylene vapor expansion and contraction; airtight storage facilities are not recommended. Aluminum is not recommended for storage facilities.

**Transportation Data (49 CFR 172.101-2)**

DOT Shipping Name: Tetrachloroethylene

DOT Label: None

IMO Label: Saint Andrew's Cross (X)\*

DOT ID No. UN1897

DOT Hazard Class: ORM-A

IMO Class: 6.1

\*Harmful-Slow away from Foodstuffs (Materials of IMO Class 6.1, Packaging Group III).

**References:** 1, 12, 73, 84-94, 100, 103.

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Prepared by PJ Igoe, BS

Industrial Hygiene Review: DJ Wilson, CIH

Medical Review: MJ Hardies, MD

# Material Safety Data Sheet

From Genium's Reference Collection  
Genium Publishing Corporation  
1145 Catalyn Street  
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(518) 377-8855



No. 522  
PROPYLENE GLYCOL  
MONOMETHYL ETHER  
(Revision A)  
Issued: October 1987  
Revised: November 1987

| SECTION 1. MATERIAL IDENTIFICATION   |                                 |   | 24   |                   |
|--|---------------------------------|---|--|-------------------|
| <b>Material Name:</b> PROPYLENE GLYCOL MONOMETHYL ETHER  |                                 |   |  |                   |
| <b>Description (Origin/Uses):</b> Used as a solvent for cellulose, acrylics, dyes, inks, and stains.   |                                 |   |  |                   |
| <b>Other Designations:</b> 1-Methoxy-2-Propanol; C <sub>3</sub> H <sub>8</sub> O <sub>2</sub> ; NIOSH RTECS No. UB7700000; CAS No. 0107-98-2   |                                 |   |  |                   |
| <b>Manufacturers:</b> Contact your supplier or distributor. Consult the latest edition of the <i>Chemicalweek Buyer's Guide</i> (Genium ref. 73) for a list of suppliers.  |                                 |   |  |                   |
| <b>SECTION 2. INGREDIENTS AND HAZARDS</b>  |                                 |   | <b>HMIS</b><br>H 1<br>F 3 R 1<br>R 0 I 3<br>PPG* S 1<br>*See sect. 8 K 1   |                   |
| <b>Propylene Glycol Monomethyl Ether, CAS No. 0107-98-2</b>  |                                 | <b>%</b><br>99  | <b>EXPOSURE LIMITS</b><br>ACGIH TLVs, 1987-88<br>TLV-TWA: 100 ppm, =360 mg/m <sup>3</sup><br>TLV-STEL: 150 ppm, =540 mg/m <sup>3</sup><br><br><b>Toxicity Data*</b><br>Rat. Oral, LD <sub>50</sub> : 5660 mg/kg<br>Rat. Inhalation, LC <sub>50</sub> : 7000 ppm/4 Hrs<br>Mouse, Oral, LD <sub>50</sub> : 11700 mg/kg |                   |
| <div style="text-align: center;"><math display="block">\begin{array}{ccccccc} &amp; H &amp; &amp; H &amp; &amp; H &amp; &amp; H \\ &amp;   &amp; &amp;   &amp; &amp;   &amp; &amp;   \\ H &amp; - C &amp; - &amp; O &amp; - &amp; C &amp; - &amp; C &amp; - &amp; C &amp; - &amp; H \\ &amp;   &amp; &amp;   &amp; &amp;   &amp; &amp;   \\ &amp; H &amp; &amp; H &amp; &amp; OH &amp; &amp; H \end{array}</math></div> <p>*See NIOSH RTECS for additional data with references.</p> |                                 |   |  |                   |
| <b>SECTION 3. PHYSICAL DATA</b>  |                                 |   |  |                   |
| <b>Boiling Point:</b> 248°F (120.1°C)<br><b>Vapor Pressure:</b> 11 Torr at 77°F (25°C)<br><b>Water Solubility:</b> 100% (Complete)<br><b>Vapor Density (Air = 1):</b> 3.11   |                                 | <b>Evaporation Rate (n-BuAc = 1):</b> 0.66<br><b>Specific Gravity:</b> 0.931<br><b>Melting Point:</b> -139°F (-95°C) (Sets to Glass)<br><b>Molecular Weight:</b> 90.12 Grams/Mole |  |                   |
| <b>Appearance and Odor:</b> Colorless liquid; pleasant, characteristic ethereal odor.  |                                 |   |  |                   |
| <b>SECTION 4. FIRE AND EXPLOSION DATA</b>  |                                 |   | <b>LOWER</b>   | <b>UPPER</b>      |
| <b>Flash Point and Method</b>  | <b>Autoignition Temperature</b> | <b>Flammability Limits in Air</b>   | <b>Not Listed</b>  | <b>Not Listed</b> |
| 97°F (36°C) CC   | Not Listed                      | % by Volume   | Listed   | Listed            |
| <b>Extinguishing Media:</b> Use a dry chemical, carbon dioxide, "alcohol" foam, or water spray to extinguish fires involving propylene glycol monomethyl ether. A water spray may be used to cool fire-exposed containers.   |                                 |   |  |                   |
| <b>Unusual Fire/Explosion Hazards:</b> This OSHA class IC combustible liquid is a moderate fire hazard when exposed to heat or flame.  |                                 |   |  |                   |
| <b>Special Fire-fighting Procedures:</b> Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.   |                                 |   |  |                   |
| <b>SECTION 5. REACTIVITY DATA</b>  |                                 |   |  |                   |
| Propylene glycol monomethyl ether is stable. Hazardous polymerization cannot occur.  |                                 |   |  |                   |
| <b>Chemical Incompatibilities:</b> Oxidizing agents, aluminum, copper, or their alloys.  |                                 |   |  |                   |
| <b>Conditions to Avoid:</b> This material has a solvent effect on many plastics, resins, and rubbers, so before using any material or safety and handling equipment with this product, establish the margin of safety of this solvent effect.  |                                 |   |  |                   |
| <b>Hazardous Products of Decomposition:</b> Oxides of carbon such as carbon monoxide (CO) and carbon dioxide (CO <sub>2</sub> ).   |                                 |   |  |                   |

**SECTION 6. HEALTH HAZARD INFORMATION**

Propylene glycol monomethyl ether is not listed as a carcinogen by the NTP, IARC, or OSHA.

**Summary of Risks:** This material is somewhat less toxic than ethylene glycol ether. The threshold for adverse effects appears to be about 680 to 900 mg/kg body weight/day. Exposure above 100 ppm causes eye irritation, tearing, and an objectionable odor. Evidence of anesthetic properties were noted at exposure levels approaching 1000 ppm. This material is low in systemic toxicity, and the ACGIH exposure limits cited in section 2 are set to avoid eye irritation and complaints about the odor. Liver and kidney damage and reduced growth have been reported in animal studies. Inhalation studies of animals revealed minor nervous system depression. In rats mild fetotoxic effects were observed. The acceptable intake (subchronic) for 70 kg, human, has been calculated to be 476 mg per day.

**Medical Conditions Aggravated by Long-Term Exposure:** None reported. **Target Organs:** Eyes, central nervous system, throat, nose, gastrointestinal tract. **Primary Entry:** Inhalation, ingestion, skin contact. **Acute Effects:** Eye, nose, and throat irritation; nausea. **Chronic Effects:** None reported.

**FIRST AID:** **Eye Contact:** Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. **Skin Contact:** Wash thoroughly with soap and water. **Inhalation:** Remove victim to fresh air; restore and/or support his breathing as needed. **Ingestion:** Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. Give victim several glasses of water or milk to drink to dilute the material.

**GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES.** Seek prompt medical assistance for further treatment, observation, and support after first aid.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**Spill/Leak:** Notify safety personnel of spills or leaks involving propylene glycol monomethyl ether. Remove sources of heat or ignition, provide optimum explosion-proof ventilation, and use only nonsparking tools and equipment. Cleanup personnel require protective equipment to avoid inhalation of vapors or contact with this liquid. Contain the spill and prevent runoff. Pick up liquid waste directly or collect it on an absorbent solid such as vermiculite and then place it into an appropriate container for disposal.

**Waste Disposal:** Consider reclamation, recycling, or destruction rather than disposal in a landfill. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

**OSHA Designations**

Air Contaminant (29 CFR 1910.1000 Subpart Z): Not Listed

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste: Not Listed

CERCLA Hazardous Substance: Not Listed

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**Goggles:** Always wear protective eyeglasses or chemical safety goggles. Follow the eye- and face-protection guidelines of 29 CFR 1910.133. **Gloves:** Wear impervious gloves. **Respirator:** Use a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow the respirator guidelines in 29 CFR 1910.134. Unknown concentrations require an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will not protect workers from oxygen-deficient atmospheres.

**Other Equipment:** Wear rubber boots, apron, and other personal protective equipment suitable to the work situation.

**Ventilation:** Install and operate both general and local exhaust-fume ventilation systems of sufficient power to maintain airborne levels of propylene glycol monomethyl ether below the TLV exposure limits cited in section 2. Local exhaust hoods must have a minimum face velocity of 100 fpm (linear feet per minute). All ventilation systems must be of maximum explosion-proof design. **Safety Stations:**

Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Remove and launder contaminated clothing before wearing it again; clean this material from shoes and equipment. **Comments:** Practice good personal hygiene. Keep this material off of your clothes and equipment. Avoid transferring this material from hands to mouth while eating, drinking, or smoking. Do not smoke, eat, or drink in any immediate work area.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**Storage Segregation:** Store propylene glycol monomethyl ether in closable carbon steel containers or stainless steel containers in a cool, dry, well-ventilated area away from sources of heat and ignition. Do not store it in or allow it to come into contact with aluminum, copper, or their alloys. Protect containers from physical damage. Storage and handling facilities must be suitable for an OSHA class IC flammable liquid. **Special Handling/Storage:** Electrically ground and bond all containers involved in shipping and transferring operations to prevent static sparks. Use nonsparking tools. Extended storage life can be realized by creating a nitrogen atmosphere in place of air. **Comments:** Do not eat this material. Avoid repeated or prolonged skin contact with the liquid. Don't inhale vapors of propylene glycol monomethyl ether. Use it only with adequate ventilation. Do not smoke in work areas.

**Transportation Data (49 CFR 172.101-2)**

**DOT Hazard Class:** Flammable Liquid

**DOT Label:** Flammable Liquid

**DOT Shipping Name:** Flammable Liquid, NOS

**IMO Label:** Flammable Liquid

**IMO Class:** 3.3

**DOT ID No.:** UN1993

**References:** 1, 4, 6, 7, 37, 45, 47, 73, 87-94, 106, 107, P11

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**Approvals**

**Indust. Hygiene/Safety** *[Signature]* 5/88

**Medical Review** *[Signature]* 5/88

MK087424

MKIL20289

# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION

1145 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854



MSDS # 120

2-BUTOXYETHANOL  
REVISION C

Issued: October 1979

Revised: September 1985

From Genium's MSDS Collection, to be used as a reference.

## SECTION 1. MATERIAL IDENTIFICATION

17

**MATERIAL NAME:** 2-BUTOXYETHANOL, Revision C

**OTHER DESIGNATIONS:** Butyl Cellosolve, n-Butyl ethylene glycol, Butyl glycol, Butyl Oxitol, DOWANOL 20.  
Ethylene Glycol n-Butyl ether, Ethylene glycol monobutyl ether, Glycol butyl ether.  
3-Oxo-1-heptanol,  $\text{CH}_3(\text{CH}_2)_3\text{OCH}_2\text{CH}_2\text{OH}$ , CAS #0111 76 2

**MANUFACTURER/SUPPLIER:** Dow Chemical USA

Available from many

suppliers, including: 2020 Dow Center

Midland, MI 48640

Telephone: (517) 626-1000

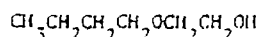


## SECTION 2. INGREDIENTS AND HAZARDS

%

HAZARD DATA

2-Butoxyethanol



\* Current (1985-86) ACGIH TLV/STEL.

OSHA PEL is 50 ppm, 240 mg/m<sup>3</sup> (skin).

Skin notation indicates a significant contribution to overall exposure via skin absorption.

ca 100

8 hr TWA: 25 ppm,

120 mg/m<sup>3</sup> (skin)

STEL: 75 ppm, 360 mg/m<sup>3</sup>

Human, Inhalation TCLO:

195 ppm/8h; IRR

Rat, Oral LD50:

1480 mg/kg

Rabbit, skin LD50:

490 mg/kg

## SECTION 3. PHYSICAL DATA

Boiling point, 1 atm ..... 340°F (171°C)

Vapor pressure, 20°C, mmHg ... 0.6

Vapor density (Air=1) ..... 4.07

Solubility in water ..... complete

Specific gravity (H<sub>2</sub>O=1) .... 0.90

Volatiles, % ..... ca 100

Evaporation rate (BuAc=1) ... 0.07

Pour point ..... -94°F (-70°C)

Molecular weight ..... 118.20

**APPEARANCE & ODOR:** Clear liquid with a slight ethereal odor. Recognition threshold for the odor is 0.18 ppm in air (100% of test panel, unfatigued).

## SECTION 4. FIRE AND EXPLOSION DATA

Lower

Upper

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

138°F (58.9°C)

T.C.C.

472°F (244°C)

% by Volume

1.1

12.7

**EXTINGUISHING MEDIA:** Carbon dioxide, dry chemical, alcohol type foam. Do not use a solid stream of water since the stream will scatter and spread the fire. Use water spray to cool fire-exposed tanks/containers. 2-Butoxyethanol is a moderate fire hazard when exposed to heat, flame or strong oxidizers. Vapors are heavier than air and may travel a considerable distance to an ignition source and flashback. Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting fires involving 2-Butoxyethanol.

## SECTION 5. REACTIVITY DATA

This combustible material is an OSHA Class IIIA liquid. It is stable in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization. 2-Butoxyethanol is incompatible with oxidizers, alkalis, heat or flame. It will attack some forms of plastics, rubber, and coatings. Auto-oxidation may produce peroxides. 2-Butoxyethanol may attack metallic aluminum at high temperatures.

Thermal decomposition or burning produces toxic vapors and gases including carbon monoxide.

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GENIUM PUBLISHING

MK087421

MKIL20286

| SECTION 6. HEALTH HAZARD INFORMATION   |   | TLV 25 ppm (skin) See Section 2 |
|--|---|---------------------------------|
| <p>Vapors of 2-Butoxyethanol are irritating to the eyes, nose and throat at concentrations above 100 ppm. The low vapor pressure and slow evaporation of this material at room temperature minimize the inhalation hazard. If overexposure does occur, however, headache, nausea, vomiting, drowsiness, and unconsciousness may result. Prolonged exposure to vapors may cause damage to the liver, kidneys, lungs, and red blood cells, causing blood in the urine. Tears, temporary clouding of the cornea, drowsiness and shortness of breath may also be observed. 2-Butoxyethanol readily penetrates the skin, and toxic action from excessive skin exposure may be more likely than from vapor inhalation. Symptoms of toxic skin absorption are similar to those observed after inhalation exposure. The liquid is damaging to the eyes and causes pain, conjunctival irritation and transitory corneal injury. It is highly toxic by ingestion. The TLV is set to prevent irritation and systemic effects. <b>FIRST AID: SKIN CONTACT:</b> Remove contaminated clothing, and immediately flush exposed area with water. Wash skin with soap and water. Get medical help for persistent irritation or if large areas were exposed. <b>EYE CONTACT:</b> Immediately flush eyes with copious amounts of water for at least 15 minutes, making sure to flush under the eyelids. Get medical assistance (inplant, Paramedic, community). <b>INHALATION:</b> Remove person to fresh air. Restore and/or support breathing as required. Get medical assistance (inplant, Paramedic, community). <b>INGESTION:</b> Give victim one or two glasses of water. Induce vomiting by giving 50 cc (2 tablespoons) Syrup of Ipecac or by sticking finger to back of throat. Contact a physician or Poison Control Center. Never give anything by mouth to a person who is unconscious or is having convulsions. <b>NOTE:</b> Give children 1 glass of water and 15 cc (1 tablespoon) Syrup of Ipecac.</p> |   |                                 |
| SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES   |   |                                 |
| <p>Notify safety personnel of large spills or leaks. Provide maximum explosion-proof ventilation to disperse vapors. Remove all sources of heat and ignition. Evacuate all personnel from the area, except for those involved in clean-up. Remove leaking containers to safe place if feasible. Absorb small quantities on paper towel or vermiculite and place in closed container for disposal. Dike large spills and collect for reclamation or disposal. Liquid or residues may be flushed with water to an open area (not to sewer). Clean-up personnel should wear respiratory equipment and protective clothing to prevent personal exposure.</p> <p><b>DISPOSAL:</b> Place in closed container for disposal by licensed contractor or burn in an approved incinerator. Follow all Federal, State and Local regulations.</p>  |   |                                 |
| SECTION 8. SPECIAL PROTECTION INFORMATION  |   |                                 |
| <p>Provide general and local exhaust ventilation (explosion-proof) to meet TLV requirements. For emergency or nonroutine exposures where the TLV may be exceeded, use an appropriate NIOSH-approved full face respirator. All electrical service in use or storage areas should have an explosion-proof design.</p> <p>Prevent skin contact by wearing impermeable gloves and protective clothing, apron, boots, etc. as required, depending upon the situation. Wear safety goggles and/or faceshield when splashing is possible. Remove contaminated clothing immediately and do not reuse until it has been properly laundered.</p> <p>Eyewash stations and safety showers should be readily accessible to use and handling areas.</p> <p>Contact lenses pose a special hazard: soft lenses may absorb and all lenses concentrate irritants.</p>  |   |                                 |
| SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS  |   |                                 |
| <p>Store in closed containers in a cool, dry, well-ventilated area away from oxidizers, heat, sparks, or open flame. Protect containers from physical damage. Do not store 2-Butoxyethanol in aluminum containers.</p> <p>Use caution when handling this compound since it can be readily absorbed through the skin to produce toxic effects. Use only with adequate ventilation and avoid breathing vapors.</p> <p>Employees working with 2-Butoxyethanol should be given preplacement and periodic medical exams which include evaluation of the CNS, kidneys, liver, lungs, skin and blood. Do not smoke or eat in areas when this material is being used or handled. Ground and bond containers and equipment when transferring or pouring to prevent static sparks. Use non-sparking tools.</p> <p><b>DOT CLASSIFICATION:</b> Not regulated.</p>  |   |                                 |
| DATA SOURCE(S) CODE (See Glossary) 1-4, 6-9, 12, 21, 23, 26, 47, 59, 79, R.  |   |                                 |
| <small>Intelligence as to the availability of information before our purchase is not made and is not made by purchase of information. Therefore, although we may have some knowledge of the availability of such information, we cannot guarantee the accuracy of such information, make no representation and assume no responsibility as to the availability of such information for application to purchase a product or service or for the consequences of its use.</small>  | APPROVALS <i>J. R. ... 11/85</i>        |                                 |
|  | INDUST. HYGIENE/SAFETY <i>... 11.85</i> |                                 |
|  | MEDICAL REVIEW: <i>... Dec 85</i>       |                                 |

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NO. 2  
POTASSIUM HYDROXIDE  
Revision 3  
DATE February 1984

**MATERIAL NAME:** POTASSIUM HYDROXIDE  
**OTHER DESIGNATIONS:** Caustic Potash, Potash Lye, KOH, GE Material D4B11, CAS #001 310 583  
**MANUFACTURER:** Available from many suppliers, including:  
Hooker Chemicals & Plastics Corp. Allied Chemical  
Industrial Chemicals Group P.O. Box 1139R  
Niagara Falls, NY 14303  
Tel: (716) 278-7777 Morristown, NJ 07960 Tel: (201) 455-4157  
Emerg Tel: (201) 455-2000

|                                   |   |
|-----------------------------------|---|
| Typical content:                  |   |
| Potassium Hydroxide (KOH)         | >83   |
| Water                             | <13   |
| Potassium Carbonate ( $K_2CO_3$ ) | <3.5  |
|                                   | Ceiling Level<br>2 mg/m <sup>3</sup> (KOH)*   |
|                                   | Human, Skin<br>50 mg/24H<br>Severe Irritation |
| *ACGIH (1983) TLV.                | Rat, Oral<br>LD <sub>50</sub> 365 mg/kg       |

|  |                  |                         |             |
|--|------------------|-------------------------|-------------|
| Boiling point, 1 atm, deg F  | ---- 2400        | Specific gravity, 20/4C | ----- 2.044 |
| Vapor pressure, 719 C, mm Hg   | --- 1.0          | Melting point, deg C    | ----- 1360  |
| Volatility @ R.T.  | ----- Negligible | (if anhydrous - 380C)   |             |
| Solubility in water, %, at 0 C   | - 49             | pH (0.1 M solution)     | ----- 13.5  |
| 20 C   | - 52             | Molecular weight        | ----- 56.1  |
| 100 C  | - 64             |                         |             |
| Appearance & Odor: Off-white, hygroscopic solid; no odor. (Irritancy of KOH dust may become noticeable at 2 mg/m <sup>3</sup> .) |                  |                         |             |

|                        |                    |                            |     |     |
|------------------------|--------------------|----------------------------|-----|-----|
| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air |     |     |
| None-Not combustible   | N/A                | N/A                        | N/A | N/A |

Although it is not combustible and does not support combustion, it can be hazardous if present in a fire area. The following should be known for fire fighting: (1) It can melt and flow when heated (m.p. about 360 C). (2) Hot or molten material can react violently with small amounts of water (splattering, misting). (3) Can react with certain metals, such as aluminum, to generate flammable hydrogen gas. (4) Reacts with CO<sub>2</sub>. Firefighters should use self-contained respirator and full protective clothing.

It is a stable material in closed containers under normal conditions of storage and handling. It does not polymerize. It is hygroscopic. It reacts with carbon dioxide from the air to form potassium carbonate.

Potassium hydroxide can react violently with strong acids and with many organic chemicals especially with nitrocarbons and chlorocarbons. (Reacts with trichloroethylene to form spontaneously flammable dichloroacetylene.) It generates much heat when it dissolves in water.

Avoid contact with leather and wool (hydrolysis). It is corrosive to aluminum, tin, zinc, and alloys which contain these metals (liberates hydrogen).

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|   |  |
|---|--|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>  | TLV (Ceiling) 2 mg/m <sup>3</sup>  |
| <p>Strongly alkaline! Solid or its Conc. solutions can be rapidly corrosive to human tissue, producing severe burns and severe to permanent eye injury. Dust/mist inhalation can injure the entire respiratory tract. Ingestion causes burns, extreme pain and esophageal stricture. Estimated adult LD<sub>50</sub> is 5g.</p> <p><b>FIRST AID:</b></p> <p><b>Eye Contact:</b> Immediately flush with running water for 15 min., including under eyelids. (Speed in rinsing may save eyesight!) Contact physician! Continue gentle flushing 30 minutes or more or until medical help obtained.</p> <p><b>Skin Contact:</b> Flush with running water, under safety shower while removing clothing for gross contact. Continue flushing up to an hour for serious cases until medical help obtained.</p> <p><b>Inhalation:</b> Safely remove to fresh air. Contact physician. Have trained person administer oxygen for respiratory distress.</p> <p><b>Ingestion:</b> Immediately give 2-3 glasses of milk or water to drink; then citrus juice or diluted vinegar to neutralize. Contact physician. Vomiting may occur spontaneously, but do not induce it. Repeat giving liquid if vomiting occurs.</p> <p>Get medical help for treatment, observation and support after first aid.</p> |  |
| <b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>  |  |
| <p>Notify safety personnel of large spills. Institute prior plan. Provide ventilation (explosion-proof where H<sub>2</sub> can be generated). Clean-up personnel need protection against inhalation of mists or dusts and skin or eye contact.</p> <p>Promptly shovel or sweep up dry material and place in appropriate container for use or disposal. (Delayed clean-up will allow pick up of moisture, increasing clean-up task.)</p> <p><b>CAUTION!</b> Avoid dusting conditions. Wet trace residues with water and neutralize with dilute acetic acid. (Sodium bicarbonate may be used to partially neutralize.) Flush with much water. Do not flush waste caustic directly to sewer or surface waters.</p> <p><b>DISPOSAL:</b> Carefully dissolve in water and neutralize with dilute acetic acid. Flush to sewer with lots of water, regulations permitting. Or dispose of through a licensed contractor. Consider use of waste caustic for neutralizing plant acid wastes.</p> <p>Follow Federal, State and Local Regulations.</p> <p><b>AQUATIC TOXICITY</b> TLm 96: 100-10ppm EPA (CWA) RQ is 1000 lbs. (40CFR 117)</p>  |  |
| <b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>   |  |
| <p>Provide general ventilation, and also local exhaust ventilation (with filtration to remove KOH from exhausted air) to meet TLV requirements, especially where dusting or misting occurs. For exposures to 100 mg/m<sup>3</sup> use high efficiency particulate respirator or a self-contained respirator; full facepiece. Wear chemical safety goggles and/or full faceshield where dusting or splashing is possible. Use neoprene or rubber gloves and appropriate protective clothing (apron, boots, etc.) where needed to prevent contact, especially when solutions are prepared. Soiled clothing to be removed promptly and laundered before reuse.</p> <p>Eyewash fountains, washing facilities and safety showers should be <u>immediately</u> accessible in areas of use and handling.</p> <p>Provide employee training for those working with KOH; until trained, workers should not work with this material.</p>   |  |
| <b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>   |  |
| <p>Store in closed containers in a dry, well-ventilated area separate from acids, peroxides, easily ignitable materials and other incompatibles. Protect containers from physical damage. Have abundant water supply available where stored or used. Drainage systems for storage or use areas need retention basins for pH adjustment and dilution of spills prior to discharge.</p> <p>To prepare solutions add caustic potash slowly to water while stirring to avoid rapid heat build up. Avoid breathing dusts or mists. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Wear protective clothing when handling material.</p> <p>DOT Classification: CORROSIVE MATERIAL I.D. No. UN1813 (Dry Solid) Label: CORROSIVE</p> <p>DATA SOURCE(S) CODE: 1-11,14,25,26,37,39,43,47-49</p>  |  |
| <p><small>Judgment as to the suitability of information herein for purchaser's purposes are necessary purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corporation extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or the consequences of its use.</small></p>   | <p>APPROVALS: MIS. CRD <i>J. M. Nelson</i></p> <p>INDUST. HYGIENE SAFETY <i>W. J. 10-10</i></p> <p>MEDICAL REVIEW: FEB 13 1984</p> |

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# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION  
1145 CATALYN STREET  
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(518) 377-8855



No. 6A

HYDROFLUORIC ACID  
AQUEOUS (47-70%)

Revision B

Date May 1981

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: HYDROFLUORIC ACID, AQUEOUS (47-70%)

DESCRIPTION: A solution hydrogen fluoride gas in water. Properties vary with concentration.

OTHER DESIGNATIONS: GE Material D4A7, CAS #007 664 393

MANUFACTURER: Available from many suppliers, including Harshaw Chemical Company, and E.I. duPont de Nemours Co., Inc.

## SECTION II. INGREDIENTS AND HAZARDS

Hydrogen fluoride (HF)

Water

47-70

Balance

### HAZARD DATA

8-hr TWA 2 mg/m<sup>3</sup> or  
3 ppm\*

--

\*Current OSHA Standard and ACGIH (1980) TLV (as HF).

NIOSH has recommended 10-hr TWA of 2.5 mg (as F)/m<sup>3</sup>

and a ceiling level of 5.0 mg/m<sup>3</sup> (15 min. sample).

TLV set at level to minimize irritation of eyes and nose and to prevent fluorosis. DuPont recommends that this level be treated as a ceiling limit.

## SECTION III. PHYSICAL DATA

48% acid

70% acid

|                                  |               |              |                       |          |
|----------------------------------|---------------|--------------|-----------------------|----------|
| Boiling point, 1 atm -----       | 225 F (107 C) | 152 F (66 C) | Volatiles, % -----    | ca 100   |
| Weight % HF in vapor at BP ----- | ca 80         | ca 98        | Water solubility----- | Complete |
| Vapor pressure at 20 C, mm Hg -- | ca 25         | ca 125       | pH -----              | <2       |
| Specific gravity (0/4 C) -----   | 1.18          | 1.27         |                       |          |
| Freezing point -----             | ca -35 F      | ca - 95 F    |                       |          |

Appearance & Odor: Colorless, or nearly colorless, fuming liquid with a pungent, irritating odor above 5 ppm.

## SECTION IV. FIRE AND EXPLOSION DATA

LOWER UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

N/A

N/A

N/A

Extinguishing Media: Water or carbon dioxide. Keep upwind of fire.

This material is nonflammable; however, flammable and explosive hydrogen gas may be formed when HF reacts with certain metals.

Dangerous when heated; emits toxic corrosive fumes. Avoid getting water into tanks or drums, can cause generation of heat and possible spattering.

Firefighters should wear self-contained breathing-apparatus, eye protection, and complete body protection equipment when fighting an HF fire.

## SECTION V. REACTIVITY DATA

Hydrofluoric acid is a stable chemical when used and stored under proper conditions. This acidic material will attack glass, concrete, certain metals, silica-containing materials, natural rubber, leather, and many organics. It reacts with silica to produce SiF<sub>4</sub>, a hazardous colorless gas. Reaction with cyanides or sulfides may cause release of poisonous cyanide or hydrogen sulfide gas.

Keep 50% acid in tightly closed polyethylene, TEFLON, lead, wax, or paraffin coated containers. >60% HF concentrations can be handled in passivated steel containers and piping of appropriate design.

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|  |  |            |     |  |     |                               |                    |                 |             |
|--|--|------------|-----|--|-----|-------------------------------|--------------------|-----------------|-------------|
| SECTION VI. HEALTH HAZARD INFORMATION  | TLV 3 ppm or 2 mg/m <sup>3</sup> (as HF) |            |     |  |     |                               |                    |                 |             |
| <p>HF is not detected by smell at 3 ppm but is immediately irritating to mucous membranes at over 5 ppm. Inhalation of vapors can cause extreme irritation of respiratory tract, pulmonary edema, congestion, and fluorosis. Breathing 50 ppm for 30-60 min. may be fatal. Eye contact can cause permanent damage. Skin contact causes severe burns, which may not be immediately painful or visible; concentrations below 50% may not produce symptoms for 8 hours or longer. Ingestion can cause throat burns and severe swelling of windpipe.</p>   |  |            |     |  |     |                               |                    |                 |             |
| <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Immediately flush with water for 15 min. or more, including under eyelids.*</p> <p><u>Skin Contact:</u> Wash acid from the skin. Remove contaminated clothing. Continue washing 2-4 hours with water; or preferably if available, soak in iced Zephiran (0.13%), epsom salt, or 70% denatured ethyl alcohol solution for 1-4 hours, depending on severity of burns.*</p> <p><u>Inhalation:</u> Immediately remove to fresh air. Admin. 100% O<sub>2</sub> and repeat 1/2 hr intervals.*</p> <p><u>Ingestion:</u> Do not induce vomiting. Give large quantities of milk or water with milk of magnesia.*</p> <p>*Get medical attention promptly for all affected persons. First aid procedures should be planned before beginning work with HF. Consider hospitalization.</p>   |  |            |     |  |     |                               |                    |                 |             |
| SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES  |  |            |     |  |     |                               |                    |                 |             |
| <p>Notify safety personnel, provide adequate ventilation, and remove ignition sources since hydrogen may be generated by reactions with metals. Use protective clothing &amp; equipment. HF vapor should be passed through a packed tower scrubber. Spills should be covered with lime to form a slurry. Do not flush to sewers or waterways.</p> <p><u>DISPOSAL:</u> The neutralized slurry can be scraped up for disposal in an approved landfill. Liquid wastes may be neutralized in a trench with lime in a remote location away from buildings and people. Then fill the trench with earth and cover with lumber or sheet metal until the earth settles. Follow Federal, State, and Local regulations.</p> <p><u>NOTE:</u> Porous materials (concrete, wood, plastic, etc.) will absorb HF and become a hazard for an indefinite time. Such spills to be cleaned and neutralized immediately.</p>  |  |            |     |  |     |                               |                    |                 |             |
| SECTION VIII. SPECIAL PROTECTION INFORMATION   |  |            |     |  |     |                               |                    |                 |             |
| <p>Exhaust hoods should be a noncorroding construction, with a face velocity minimum of 100 fpm. Respirators should be available for nonroutine and emergency use above the TLV. An air-supplied respirator or a self-contained breathing apparatus with full facepiece is recommended when vapors/fumes are above exposure limits, up to 20 ppm. Wear protective clothing, including boots or safety shoes with polyvinyl chloride (PVC), neoprene or composition soles; chemical goggles and/or a full face shield; coveralls with long sleeves; gauntlets and gloves of PVC or neoprene. A high degree of protection obtained with an air-inflated suit with mask and safety belt. Protective clothing not to be worn or carried beyond operation areas. Use protection suitable for conditions. Chemical showers and eyewash stations to be readily available to areas of use. Immediately shower with copious amounts of water within seconds after contact, and completely remove all clothing while in shower. Contact with dilute HF solutions (below 20% in water) may not produce immediate pain or visible damage; but after several hours, the burns will be manifest.</p>   |  |            |     |  |     |                               |                    |                 |             |
| SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS   |  |            |     |  |     |                               |                    |                 |             |
| <p>Maintain adequate ventilation. Use forced draft ventilation and scrubbers for fume control. Keep containers tightly closed. Storage facilities to be constructed for containment and dilution/neutralization of spills.</p> <p>Use nonsparking tools around tanks &amp; pipes where hydrogen gas may collect.</p> <p>Handling and storage of HF requires special materials technology for containers, pipes, valves, gaskets, etc., which is available from suppliers. TEFLON TFE or FEP fluorocarbon resins are resistant to all conc. of HF up to 500 F and 400 F respectively.</p> <p>Do not inhale HF mists or vapors! Preclude from exposure workers with kidney disease, osteofluorosis, or impaired pulmonary function.</p> <p><b>DOT Classification - CORROSIVE MATERIAL.</b> I.D. No. UN1790</p> <p><b>DATA SOURCE(S) CODE:</b> 1-11, 17, 20, 26, 31, 37, 38, 43 MSDS #6</p> <table border="1"> <tr> <td>APPROVALS:</td> <td>MIS</td> </tr> <tr> <td></td> <td>CRD</td> </tr> <tr> <td>Industrial Hygiene and Safety</td> <td><i>[Signature]</i></td> </tr> <tr> <td>MEDICAL REVIEW:</td> <td>14 May 1981</td> </tr> </table> <p><small>Notwithstanding to the liability of information herein for purchaser's purposes, the publisher's responsibility is limited to the accuracy of the information as presented in the publication. No representation is made by the publisher as to the accuracy or reliability of such information for application to particular circumstances or for consequences of its use.</small></p> |  | APPROVALS: | MIS |  | CRD | Industrial Hygiene and Safety | <i>[Signature]</i> | MEDICAL REVIEW: | 14 May 1981 |
| APPROVALS:   | MIS                                      |            |     |  |     |                               |                    |                 |             |
|  | CRD                                      |            |     |  |     |                               |                    |                 |             |
| Industrial Hygiene and Safety  | <i>[Signature]</i>                       |            |     |  |     |                               |                    |                 |             |
| MEDICAL REVIEW:  | 14 May 1981                              |            |     |  |     |                               |                    |                 |             |

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# Material Safety Data Sheet

From Genium's Reference Collection  
Genium Publishing Corporation  
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(518) 377-8855



No. 327  
ACETIC ACID, GLACIAL  
(Revision C)

Issued: December 1980  
Revised: April 1986

## SECTION 1. MATERIAL IDENTIFICATION

21

**MATERIAL NAME:** ACETIC ACID, GLACIAL

**OTHER DESIGNATIONS:** Ethanoic Acid, Anhydrous Acetic Acid, Methane Carboxylic Acid, Pyroliguous Acid, CH<sub>3</sub>COOH, CAS #0064-19-7

**MANUFACTURER/SUPPLIER:** Fisher Scientific Co., PO Box 375, 1 Reagent Lane, Fair Lawn, NJ 07410; Telephone: (201) 796-7100

HMIS

H: 2

F: 2

R: 0

PPE\*

\*See Sect. 8

R 1

I 4

S 4

K 2

## SECTION 2. INGREDIENTS AND HAZARDS

%

### HAZARD DATA

Acetic Acid, CAS #0064-19-7

>99.5

8-hr TWA: 25 mg/m<sup>3</sup>  
or 10 ppm\*

Human, Oral, TDLo:  
1470 µg/kg

Human, Inhalation, TCLo:  
816 ppm/3 min.

\* Current OSHA PEL and ACGIH (1985-86) TLV.

## SECTION 3. PHYSICAL DATA

Boiling Point, 1 atm ... 244°F (118°C)  
Vapor Pressure @ 25°C, mm Hg ... 14.8  
Water Solubility ... Soluble  
Vapor Density (Air = 1) ... 2.07

Specific Gravity (H<sub>2</sub>O = 1) ... 1.05  
Melting Point ... 62°F (16.6°C)  
Percent Volatile by Volume ... 100  
Molecular Weight ... 60.06

Appearance and odor: A clear, colorless, mobile liquid with a characteristic sharp and pungent vinegarlike odor that is perceptible (unfatigued) at above 1 ppm.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

112°F (44.5°C) TCC

800°F (427°C)

% by Volume

4

16

**EXTINGUISHING MEDIA:** Use water spray, dry chemical, alcohol foam, or CO<sub>2</sub>. Water spray can be used to flush spills away from exposures and to dilute spills to nonflammable mixtures. Use water to keep fire-exposed containers cool. Glacial acetic acid is a combustible liquid.

**UNUSUAL FIRE/EXPLOSION HAZARDS:** Diluted with water, acetic acid can react with metals to produce hydrogen gas.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Fire fighters must use self-contained breathing apparatus to protect them against suffocation and corrosive vapors when this material is burning.

## SECTION 5. REACTIVITY DATA

Glacial acetic acid is stable. Hazardous polymerization cannot occur.

**CHEMICAL INCOMPATIBILITIES:** This material may react violently with strong oxidizing agents, ammonium nitrate, phosphorous trichloride, potassium hydroxide, and other alkaline materials. It reacts readily with most common metals (except aluminum), basic salts, and amines, etc., to form water-soluble salts. It reacts with alcohol to form esters. Nitric acid or chromic acid can explode with acetic acid if not kept cold. Mixing acetic acid with chlorosulfonic acid, 2-aminoethanol, oleum, or ethylene diamine in a closed container can cause an increase in the temperature and pressure of any of these materials.

**CONDITIONS TO AVOID:** Protect glacial acetic acid from freezing. It expands when it is frozen.

**HAZARDOUS DECOMPOSITION PRODUCTS** may include carbon dioxide and carbon monoxide.

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**SECTION 6. HEALTH HAZARD INFORMATION**

Glacial acetic acid is not listed as a carcinogen by the NTP, IARC, or OSHA.

**SUMMARY OF RISKS:** Inhalation of this material's vapors at concentrations of over 50 ppm is intolerable, resulting in irritation of the eyes, nose, throat, and lungs. Repeated exposure to high concentrations of this material may produce congestion of the pharynx. Neither odor nor degree of irritation are adequate to indicate concentration of vapor. Skin contact can produce deep burns with skin destruction. High concentrations of vapor may blacken the skin, produce skin sensitization, conjunctivitis, and erosion of exposed teeth. Eye contact will cause immediate burns and possible permanent damage. Ingestion is improbable because the odor would be extremely irritating; but severe intestinal irritation would result in burns to the mouth and the upper respiratory tract. **TARGET ORGANS:** Respiratory system, eyes, skin, and teeth. **PRIMARY ENTRY:** Inhalation, skin. **ACUTE EFFECTS:** Irritation of eyes, skin, and respiratory tract. **CHRONIC EFFECTS:** Erosion of tooth enamel. **FIRST AID:** **EYE CONTACT:** Immediately flush eyes, including under the eyelids, with plenty of running water for at least 15 minutes. Speed in diluting and rinsing with water is extremely important if permanent eye damage is to be avoided. Get medical help.\* **SKIN CONTACT:** Immediately flush affected areas with water, removing contaminated clothing under the safety shower. Continue washing with water and get medical help.\* **INHALATION:** Remove victim to fresh air. Restore and/or support his breathing. Get medical help.\* **INGESTION:** Rinse victim's mouth with water. Dilute acid immediately with large amounts of milk or water. Get medical help.\* Do not induce vomiting; if it occurs spontaneously, give victim more fluid. Never give anything by mouth to someone who is unconscious. \* **GET MEDICAL ASSISTANCE -** In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**SPILL/LEAK:** Handle major acetic spills by following a predetermined plan. Contact your supplier for assistance in this planning, in meeting local regulations, and for disposing of large amounts. Notify safety personnel of spills. Provide optimum ventilation to handle corrosive fumes. Fumes can affect neighboring materials. Cleanup personnel need protection against inhalation or contact. Keep upwind of spilled or leaking material. Contain spill. Minor leaks or spills can be diluted with much water and neutralized with soda ash or lime.

**DISPOSAL:** Place neutralized waste in a landfill. Follow Federal, state, and local regulations.

EPA Clean Water Act, Reportable Spill Quantity: 1,000 lbs/454 kg.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Respirators should be available for nonroutine or emergency use. Where fumes are below 500 ppm, a chemical-cartridge organic-vapor respirator with a full facepiece or a self-contained breathing apparatus with a full facepiece is warranted; fumes up to 1000 ppm require a Type C air-supplied respirator with a full facepiece operated in pressure-demand mode. For levels above 1000 ppm, use a self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode.

Provide adequate exhaust ventilation to meet TLV requirements. Exhaust hoods should have a minimum air velocity of 100 fpm (linear feet per minute).

Wear rubber gloves, aprons, etc., to prevent skin contact. Splash-proof goggles or a full face shield should be worn to prevent any eye contact. Splash-proof, gas-tight goggles may also be required to prevent irritation of the eyes from fumes. Eyewash stations and showers must be readily available where this material is handled.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

Store glacial acetic acid in suitable tightly closed containers in a well-ventilated area having acid-resistant floors with controlled drainage. Prevent freezing in storage. Keep temperature above 62°F (16.6°C) to avoid rupture of carboys and glass containers. Protect containers against physical damage. Detached storage is preferred for this material. Store it in sealed containers away from oxidizing agents and combustible materials. Glass, polyethylene, and Type 316 stainless steel containers are suitable. Exhaust ducts for ventilation should be acid resistant. Use whatever ventilation is needed to keep fumes or mist below TLV levels. Avoid breathing acetic acid fumes. Do not get it in eyes, or on skin or clothing. Do not ingest it. Practice good personal hygiene. Never add water to acid. Do not smoke. Use nonsparking tools and vapor-proof electrical fixtures. Prevent skin and eye contact because this acid is highly corrosive to body tissue. Olfactory detection at 1 ppm is well below the TLV; however, documentation shows that workers can tolerate up to 200 ppm, probably because of olfactory fatigue. Suspected areas of high or variable concentrations of acetic acid should be tested before employee exposure. Acetic acid is designated as a hazardous substance by the EPA (40 CFR 116).

DOT Classification: Corrosive. DOT No. UN2789. Label: Corrosive.

Data Source(s) Code: 2-12, 15, 23-26, 31, 34, 37-39, 42, 43, 47, 54, 55, 58, 59, 82, CK

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Approval: *J.O. O'Connor*, 1/87.

Indust. Hygiene/Safety *2/21/87*

Medical Review *[Signature]*

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# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION

1145 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854



MSDS # 1291

TRITON X-100 SURFACTANT

Issued July, 1985

Revised:

From Genium's MSDS Collection, to be used as a reference.

## SECTION 1. MATERIAL IDENTIFICATION

**MATERIAL NAME:** TRITON X-100 SURFACTANT (Trade name)  
**Other Designations:** Octylphenoxypolyethoxyethanol; CAS #009 002 931  
**Manufacturer:** Rohm & Haas  
 Independence Mall West  
 Philadelphia, PA 19105  
 Emergency Phone: (215) 592-5000

## SECTION 2. INGREDIENTS AND HAZARDS

|  | %  | HAZARD DATA  |
|--|----|--|
| Octylphenoxypolyethoxyethanol<br>(See Section 9 for ethylene oxide potential content). | 99 | No TLV established.<br><br>Rat, oral<br>LD50: 1900mg/kg<br>-----<br>Rabbit, dermal<br>LD50: >5g/kg |
| <b>DESCRIPTION:</b> A nonionic water soluble octylphenol ethoxylate surfactant.        |    |  |

## SECTION 3. PHYSICAL DATA

|   |   |
|---|---|
| Pour Point, deg C(F) ..... 7 (45)       | Density @ 25°C, lbs/gal ..... 8.9       |
| Boiling Point, deg C(F) ..... 270 (520) | Viscosity, Brookfield CPS @ 25°C... 240 |
| Vapor pressure, mmHg @ 20°C... <1       | pH of 5% aqueous soln ..... 6-8         |
| Vapor density (Air=1) ..... >1          | Solubility in water ..... Complete      |
| Specific gravity @ 25°C ..... 1.065     | Average molecular weight ..... 628.     |

**APPEARANCE & ODOR:** A clear, viscous liquid with mild odor.

## SECTION 4. FIRE AND EXPLOSION DATA

|                        |                    |                            | Lower | Upper |
|------------------------|--------------------|----------------------------|-------|-------|
| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air |       |       |
| 248K /550F (CCCI)      | Unknown            | Unknown                    |       |       |

**Extinguishing Media:** Use water spray, dry chemical, CO<sub>2</sub> or foam.

Firefighters should wear positive pressure self-contained breathing apparatus and full protective gear.

## SECTION 5. REACTIVITY DATA

This material is stable at normal temperatures. Its viscosity increases as temperature decreases and handling becomes difficult below 68°F. Triton X-100 is miscible in all proportions in water and most polar organic solvents (alcohols, glycols, etc.) and aromatic hydrocarbons (benzene, toluene, xylene, etc.). It is insoluble in aliphatic hydrocarbons. Triton X-100 and its aqueous solutions are non-corrosive to stainless steel (304 & 316) and aluminum. It is corrosive to copper and brass. Mild steel is unsuitable for aqueous solutions but is unaffected by anhydrous Triton X-100.

Contact with strong oxidizing or reducing agents may create a fire or explosion hazard. Hazardous polymerization does not occur.

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| <b>SECTION 6. HEALTH HAZARD INFORMATION</b>  |  | TLV  | None established |
| <p>Triton X-100 liquid and solutions can cause <u>SEVERE EYE IRRITATION</u> and possibly permanent eye damage. When tested in rabbits, eye contact caused <u>severe</u> irritation. Permanent corneal damage occurred at concentrations greater than 10%. It produced slight skin irritation in rabbits. However, no primary irritation or skin sensitization was noted after 50 human subjects were patch tested for 48 hours with undiluted TRITON X-100. It is mildly toxic on ingestion (Rat LD50 = 1.9 g/Kg). Accidental ingestion may cause nausea and vomiting.</p> <p><u>FIRST AID:</u></p> <p><u>EYE CONTACT:</u> Flush eyes, including under the eyelids, with running water for at least 15 minutes. Obtain medical attention immediately (Inplant, Paramedic, community).</p> <p><u>SKIN CONTACT:</u> Remove contaminated clothing. Thoroughly wash skin with plenty of water. Obtain medical attention if irritation develops.</p> <p><u>INHALATION:</u> Remove to fresh air. If necessary, restore/aid breathing and seek medical attention.</p> <p><u>INGESTION:</u> If person is conscious, give them plenty of water (2 - 3 glasses) to drink. Obtain medical assistance.</p> |  |  |                  |
| <b>SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES</b>  |  |  |                  |
| <p>Eliminate sources of ignition. Ventilate spill area. Clean-up personnel should wear protective gear including splash-proof safety goggles, protective clothing, and respiratory protection. Absorb small spills with paper towels, vermiculite or other inert absorbent and place in suitable containers for disposal. Pick large spills with inert material such as sand or earth, and collect liquid for reclamation or disposal. Do not flush to sewer. Avoid contamination of streams and waterways.</p> <p><u>DISPOSAL:</u> Liquid can be incinerated in an approved incinerator. Absorbed liquid may be burned in an approved landfill (NOTE: leachate can cause foaming if it reaches a stream or treatment plant). Follow federal, state and local regulations.</p>   |  |  |                  |
| <b>SECTION 8. SPECIAL PROTECTION INFORMATION</b>   |  |  |                  |
| <p>Provide general ventilation in areas of use. Local exhaust ventilation should be used where mist occurs or when vapors are released into the work environment (i.e., heating). Wear an appropriate NIOSH approved respirator during emergency operations or whenever excessive vapor levels may be encountered (confined spaces, etc.).</p> <p>Chemical splash goggles should be worn when handling this material. Impervious gloves and other protective clothing should be worn where contamination is possible. Eyewash stations and safety showers should be readily accessible in areas of use and handling.</p> <p>Contact lenses should not be worn while handling this material as they tend to absorb and/or concentrate irritants.</p>  |  |  |                  |
| <b>SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS</b>   |  |  |                  |
| <p>Store in closed containers away from excessive heat and strong oxidizing and reducing agents. Low temperature storage (68°F) can make handling difficult due to increased viscosity.</p> <p>Avoid breathing vapors and mist. Prevent eye and skin contact. Launder contaminated clothes before reuse. Maintain good personal hygiene.</p> <p>Since ethoxylates (including TRITON X-100) are produced from ethylene oxide (EtO) use of this material may be subject to OSHA's Ethylene Oxide standard (29CFR1910.1047) unless objective data is obtained showing that EtO is not released into the air at concentrations at or above the action level of 0.5 ppm EtO under conditions that will cause the greatest possible release (such as container unloading and enclosed spaces).</p> <p><u>DOT:</u> Non-regulated.</p> <p><u>DATA SOURCE(S) CODE (See Glossary):</u> 1, 4, 12, 49, 55.</p>   |  |  |                  |
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|  |  | <b>INDUST. HYGIENE/SAFETY</b> <i>JW 8/85</i>     |                  |
|  |  | <b>MEDICAL REVIEW:</b> <i>[Signature] Aug 85</i> |                  |

# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION  
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NO 311  
1,1,1-TRICHLOROETHANE  
REVISION D  
DATE August 1983

## SECTION I. MATERIAL IDENTIFICATION

**MATERIAL NAME:** INHIBITED 1,1,1-TRICHLOROETHANE  
**OTHER DESIGNATIONS:** Methyl Chloroform, MC,  $\text{CCl}_3\text{CH}_3$ , GE Material D5B79, CAS# 000 071 556,  $\alpha$ -Trichloroethane  
**TRADE NAMES & MANUFACTURER:** BLACO-THANE (Baron-Blakeslee), CHLOROTHENE NU & VG (Dow), INHIBISOL (Penetone Corp.), TRI-ETHANE (PPG Ind. Inc.), TRITHENE (SRS, Inc.)

## SECTION II. INGREDIENTS AND HAZARDS

|   | %          | HAZARD DATA   |
|---|------------|---|
| 1,1,1-Trichloroethane<br>Inhibitor, typical*  | ~95<br>< 5 | 8-hr TWA 350 ppm*<br>Unknown<br><br>Human, Inhalation<br>LC <sub>50</sub> 27 $\mu\text{m}^3/\text{m}^3$ 10 min<br><br>TCLo 920 ppm/70 min<br>(CNS effects)<br><br>Human, Oral<br>TDLo 670 mg/kg -<br>(GI effects) |
| *Inhibitors used are proprietary. Commercial materials contain up to about 5% inhibitor and are designed for cold cleaning or vapor degreasing use or both. |            |   |
| **Current OSHA PEL and ACGIH (1983) TLV. ACGIH STEL 450 ppm.  |            |   |
| NIOSH (1976) proposed a 10-hr TWA of 200 ppm with a 350 ppm ceiling (15 minute sample) and has recommended caution in use                                   |            |   |

## SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg F ----- ca 165\*      Specific gravity, 25/25C --- 1.3-1.336\*  
Vapor pressure, 20 C, mm Hg ----- 100      Volatiles, % ----- ca 100  
Vapor density (Air=1) ----- 4.55      Melting point, deg C ----- -32  
Water solubility, g/100ml  $\text{H}_2\text{O}$  @20C - 0.09      Evaporation rate ( $\text{CCl}_4=1$ ) -- 1  
Molecular weight ----- 133.41  
Appearance & Odor: Colorless liquid with a mild, sweetish, pleasant, ether-like odor which may be just perceptible (unfatigued) at about 100 ppm in air.  
\*Properties depend on the inhibitor and inhibitor level.

## SECTION IV. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp | Flammability Limits in Air<br>(High energy ignition source at 25C), Vol. % | Lower | Upper |
|------------------------|-------------------|--|-------|-------|
|                        |                   |  | 8.0%  | 10.0% |
| None                   | 537 C (998 F)     |  |       |       |

This material is nearly nonflammable. High energy, such as electric arc, is needed for ignition, and the flame tends to go out when the ignition source is removed. Material involved in a fire can emit toxic and irritating fumes. Water fog, carbon dioxide, dry chemical, or foam may be used to fight fires.

Use self-contained or air-supplied breathing apparatus for protection against suffocating vapors and toxic and corrosive decomposition products.

## SECTION V. REACTIVITY DATA

This material can be hydrolyzed by water to form hydrochloric acid and acetic acid. It will react with strong caustic, such as caustic soda or caustic potash to form flammable or explosive material. Attacks natural rubber.  
It requires inhibitor content to prevent corrosion of metals; and when inhibitor is depleted, it can decompose rapidly by reaction with finely divided white metals, such as aluminum, magnesium, zinc, etc. Do not use these metals for storage containers or in pressurized spraying equipment where MC is involved.  
It will decompose at high temperature upon contact with hot metal, or under ultra-violet radiation to produce toxic and corrosive gases (hydrogen chloride, dichloroacetylene, chlorine and some phosgene).

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|---|--|--|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>  |  | TLV 350 ppm or 1900 mg/m <sup>3</sup>  |
| <p>Brief exposure at 900-1000 ppm causes mild eye irritation and loss of coordination due to the early effects of MC on the CNS. Excessive exposure gives headache, drowsiness, impaired judgement, unconsciousness. Defats skin on contact, can produce irritation and dermatitis; can be absorbed through the skin. Eye contact gives pain and irritation. Considered low in toxicity among the chlorinated hydrocarbons.</p> <p><b>FIRST AID:</b></p> <p><b>Eye contact:</b> Flush eyes well with plenty of running water for 15 min, including under eyelids.</p> <p><b>Skin contact:</b> Remove solvent-wet clothing promptly. Wash contact area with warm water and soap. Get medical attention for irritation.</p> <p><b>Inhalation:</b> Remove to fresh air. Restore and/or support breathing as needed. Get medical assistance. (Note: Advise physician not to use adrenalin.)</p> <p><b>Ingestion:</b> Contact physician. Aspiration a hazard! Possible spontaneous vomiting. (If medical help not readily available and amount swallowed was appreciable, give milk or water to drink and induce vomiting. Repeat. Estimated lethal dose for 150 lb man is 0.5 to 1 pint.)</p> <p><b>PHYSICIAN:</b> Avoid using sympathomimetic amines in treatment.</p> |  |  |
| <b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>  |  |  |
| <p>For small spills in ventilated area, mop, wipe or soak up with absorbent material avoiding inhalation and contact. Evaporate outdoors or in an exhaust hood.</p> <p>For large spills, inform safety personnel and evacuate area. Use protective equipment during clean-up (see Sect. VIII). Ventilate area. Contain liquid, pick up and place in closed metal containers. Do not allow to enter drains and water ways.</p> <p><b>DISPOSAL:</b> Dispose of via a licensed waste solvent disposal company, or reclaim by filtration and distillation procedures. Follow Federal, State and Local regulations.</p> <p>Aquatic toxicity TLM 96: 100-10 ppm.</p> <p>EPA hazardous waste number under RCRA is U226 (40CFR261).</p>   |  |  |
| <b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>   |  |  |
| <p>Provide general and local exhaust ventilation to meet TLV requirements. Air-supplied or self-contained respirator should be available for non-routine or emergency use. A chemical cartridge-type respirator can be used for a limited time below 1000 ppm. A full facepiece is needed above 500 ppm.</p> <p>Chemical goggles or a face shield should be worn if splashing is possible. Gloves and apron (of neoprene, polyethylene or polyvinyl alcohol) should be worn when needed to avoid skin contact. Remove solvent-wet clothing promptly. A safety shower and eyewash station should be available to use if splashing is probable.</p> <p>Preplacement and periodic medical examinations should consider cardiovascular, liver, CNS functions, and skin.</p>   |  |  |
| <b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>   |  |  |
| <p>Store in closed containers in a cool, well-ventilated area. Keep water-free. Monitor inhibitor level for vapor degreasing use. Use caution in cleaning operations involving white metal fines (see Sect. V). Trichloroethylene contamination may cause decomposition when aluminum is degreased.</p> <p>Provide medical monitoring of those regularly exposed to MC in the workplace. Preclude those with CNS, liver, or heart disease from exposure. Personnel using this solvent should avoid drinking alcoholic beverages shortly before, during, or soon after exposure. NIOSH (1976 Crit. Doc.) expressed concern because of possible birth defects from high level pregnant rat exposures. Since 1976, directed studies have been negative. At occupational physicians' seminar on "Reproductive Hazards in the Workplace," Washington, DC (4/25/83), no physician was aware of data to substantiate the NIOSH concern.</p> <p>DOT Classification: ORM-A I.D. No. UN2831</p> <p>DATA SOURCE(S) CODE: 1-12, 14, 20, 23, 25, 26, 30, 31, 34, 37, 38, 45-49, 53</p>   |  |  |
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# Material Safety Data Sheet

From Genium's Reference Collection  
Genium Publishing Corporation  
1145 Catalyn Street  
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No. 7

NITRIC ACID  
(Revision C)  
Issued: October 1980  
Revised: August 1988

## SECTION 1. MATERIAL IDENTIFICATION

26

Material Name: NITRIC ACID

Description (Origin/Uses): Used to dissolve noble metals, for etching and cleaning metals, to make organic nitrates and nitrocompounds, to destroy residues of organic matter, and in explosives.

Other Designations: Red Fuming Nitric Acid;  $\text{HNO}_3$ ; CAS No. 7697-37-2

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.



NFPA

HMIS

H 3

F 0

R 1

PPG\*

\*See sect. 8

R 1

I 4

S 4

K 0

## SECTION 2. INGREDIENTS AND HAZARDS

%

## EXPOSURE LIMITS

Nitric Acid, CAS No. 7697-37-2

OSHA PEL  
8-Hr TWA: 2 ppm, 5 mg/m<sup>3</sup>

ACGIH TLVs, 1987-88  
TLV-TWA: 2 ppm, 5 mg/m<sup>3</sup>  
TLV-STEL: 4 ppm, 10 mg/m<sup>3</sup>

Toxicity Data\*\*  
Mouse, Inhalation,  $\text{LC}_{50}$ : 67 ppm/4 Hrs

\*Contact your supplier to determine the percent by weight of nitric acid in the purchased product. Water is the other component of the product.  
\*\*See NIOSH, RTECS (QU5775000, QU5900000), for additional data with references to reproductive effects.

## SECTION 3. PHYSICAL DATA

Boiling Point: Ca 251°F (122°C)\*

Specific Gravity ( $\text{H}_2\text{O} = 1$ ): 1.4\*

pH: Very Acidic

Water Solubility (%): Complete

Molecular Weight: 63 Grams/Mole

Melting Point: Ca -30°F (-34°C)\*

Appearance and Odor: A water white to slightly yellow liquid that darkens to a brownish color on aging and exposure to light; characteristic nitrogen dioxide ( $\text{NO}_2$ ) odor.

\*These properties are for the approximately 68%-by-weight nitric acid that is commercially available.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temperature

Flammability Limits in Air

% by Volume

Extinguishing Media: \*Nitric acid does not burn. Use extinguishing agents that will put out the surrounding fire. Use a water spray to dilute nitric acid during fires and to absorb liberated oxides of nitrogen.

Unusual Fire or Explosion Hazards: Although nitric acid does not burn, it is a strong oxidizing agent that can react with combustible materials to cause fires. Also, it can react with metals to liberate extremely flammable hydrogen gas. If this happens, direct fire-fighting procedures at this evolved hydrogen gas.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Choose protective equipment carefully (see sect. 5, Conditions to Avoid).

## SECTION 5. REACTIVITY DATA

Nitric acid is stable in closed containers at room temperature under normal storage and handling conditions. It cannot undergo hazardous polymerization.

Chemical Incompatibilities: Nitric acid reacts explosively with metallic powders, carbides, hydrogen sulfide, and turpentine. Contact with organic materials such as wood, paper, sawdust, or alcohol, etc., may cause fires. Combustible materials can attain an increased flammability after being exposed to nitric acid even if they do not immediately catch fire.

Conditions to Avoid: Avoid any contact with incompatible chemicals. Because it is so reactive, always establish another material's compatibility with nitric acid before mixing the two materials. This applies to the selection of safety and handling equipment, because nitric acid can attack some forms of coatings, plastics, and rubber.

Hazardous Products of Decomposition: Various nitrogen oxides, including nitric oxide ( $\text{NO}$ ), nitrogen dioxide ( $\text{NO}_2$ ), nitrous oxide ( $\text{N}_2\text{O}$ ), as well as nitric acid mist or vapor, can be produced by the decomposition reactions that can affect the nitric acid during fires.

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**SECTION 6. HEALTH HAZARD INFORMATION**

Nitric acid is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: This material is corrosive to any body tissue it contacts. Dental erosion is also reported.

Medical Conditions Aggravated by Long-Term Exposure: None reported. Target Organs: Skin, eyes, mucous membranes of the respiratory tract, teeth. Primary Entry: Inhalation, skin contact. Acute Effects: Irritation and/or corrosive burns of skin, eyes, and upper respiratory tract (URT), delayed pulmonary edema, pneumonitis, bronchitis, and dental erosion. Chronic Effects: None reported.

**FIRST AID:** Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Treat for eye burns. Skin. Immediately wash the affected area with soap and water. Watch for chemical skin burns and treat them accordingly. Inhalation. Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. If the exposure is severe, hospitalization with careful monitoring by trained medical personnel to detect the delayed onset of severe pulmonary edema (lungs filled with fluid) is recommended for at least 72 hours. Ingestion. Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. Do not induce vomiting. If the exposed person is responsive, give him or her one or two glasses of milk or water to drink as quickly as possible after exposure.

**GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES.** Seek prompt medical assistance for further treatment, observation, and support after first aid. **NOTE TO PHYSICIAN:** Wash affected skin areas with a 5% solution of sodium bicarbonate ( $\text{NaHCO}_3$ ). If ingested, the risk versus the benefit of the passage of a naso-gastric tube is debatable. Activated charcoal is of no value. Do not give the exposed person bicarbonate to neutralize the material.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**Spill/Leak:** Notify safety personnel, provide ventilation, and eliminate all sources of ignition immediately in case contact with metals should produce highly flammable hydrogen gas. Cleanup personnel need protection against contact with and inhalation of nitric acid (see sect. 8). Contain large spills and collect waste. Use water sprays to direct nitric acid away from incompatible chemicals (see sect. 5). Neutralize the spilled nitric acid with soda ash or sodium bicarbonate. Use an absorbent such as sand, earth, or vermiculite on the resulting slurry and place the neutralized nitric acid material into containers suitable for eventual disposal, reclamation, or destruction.

**Waste Disposal:** Consider reclamation, recycling, or destruction rather than disposal in a landfill. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

**OSHA Designations**

Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations (40 CFR 302.4)

CERCLA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per Clean Water Act (CWA), Section 311 (b) (4)

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**Goggles:** Always wear protective eyeglasses or chemical safety goggles. Where splashing of nitric acid solution is possible, wear a full face shield as a supplementary protective measure. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133).

**Respirator:** Consult the *NIOSH Pocket Guide to Chemical Hazards* (Genium ref. 88) for general recommendations on proper respiratory procedures. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine use (leaks or cleaning reactor vessels and storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will not protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, gauntlets, etc., to prevent skin contact with nitric acid. Choose protective equipment carefully (see sect. 5, Conditions to Avoid).

**Ventilation:** Install and operate both general and local exhaust-ventilation systems powerful enough to maintain airborne concentrations of nitric acid below the OSHA PEL standard cited in section 2. Construct exhaust ducts and systems with material such as fiberglass, which resists attack by nitric acid. **Safety Stations:** Make emergency eyewash stations, washing facilities, and safety/quickdrench showers available in work areas. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean nitric acid from shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material. Keep it off of your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area. Provide preplacement and annual medical exams with emphasis on skin irritation to workers who are regularly exposed to nitric acid. Workers must receive training before handling this material in the workplace; even experienced workers should undergo refresher training periodically.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**Storage/Segregation:** Store nitric acid in a cool, dry, well-ventilated area away from incompatible chemicals (see sect. 5). Consider outside, isolated, or detached storage. Protect containers from direct sunlight.

**Special Handling/Storage:** Build all storage facilities of nonflammable materials that are resistant to chemical attack by nitric acid. Protect containers from physical damage. Preplan for routine use and emergency response.

**Engineering Controls:** Proper ventilation is essential in bulk storage areas; consider installing an automatic monitoring system to detect hazardous levels of nitrogen oxides that can develop from this material.

**Comments:** Separate nitric acid from hydrazine, diethylenetriamine, fluorides, and all other corrosives except sulfuric acid and sulfur trioxide when shipping or transferring it.

**Transportation Data** (49 CFR 172.101-2)

**DOT Shipping Name:** (I) Nitric Acid, Fuming or (II) Nitric Acid, Over 40% or (III) Nitric Acid, 40% or Less

**DOT Label:** (I) Oxidizer and Poison or (II) Oxidizer and Corrosive or (III) Corrosive

**DOT Hazard Class:** (I) and (II) Oxidizer or (III) Corrosive Material

**DOT ID Nos.** (I) UN2032; (II) UN2031; (III) NA1760

**IMO Class:** 8 (All Types of Nitric Acid)

**IMO Label:** (I) Corrosive, Oxidizer, Poison; or (II) and (III) Corrosive

**References:** 1, 2, 26, 38, 84-94, 100, 112, 113, 114.

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# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION

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MSDS # 510

METHYLENE CHLORIDE

Revision E

Issued:

Revised: September, 1985

From Genium's MSDS Collection, to be used as a reference.

## SECTION 1. MATERIAL IDENTIFICATION

17

**MATERIAL NAME:** METHYLENE CHLORIDE (Revision E)

**OTHER DESIGNATIONS:** Dichloromethane, FREON 30, Methane Dichloride,  $\text{CH}_2\text{Cl}_2$ ; CAS#75-09-2.

**MANUFACTURER/SUPPLIER:** Available from many suppliers, including:

Dow Chemical USA  
2020 Dow Center  
Midland, MI 48640  
(517) 636-1000

## SECTION 2. INGREDIENTS AND HAZARDS

METHYLENE CHLORIDE



%

HAZARD DATA

ca 100

8 hr TWA: 100 ppm  
or 350 mg/m<sup>3</sup>

Human, Inhalation:

TCLO: 500 ppm/8 hr.  
(Blood effects)

TCLO: 500 ppm/1 year-1  
(CNS effects)

Rat, Oral: LD50:

2000 mg/kg

\* ACGIH TLV/TWA (1985-86). OSHA PEL is 500 ppm with a ceiling of 1000 and a permissible peak exposure of 2000 ppm for 5 minutes per any two-hour period.

NIOSH recommends a 10 hr. TWA or 75 ppm with a ceiling concentration of 500 ppm (15 minute TWA). NIOSH also warns that toxic hazards associated with exposure to methylene chloride are increased by the presence of alcohol and/or carbon monoxide and by heavy labor and smoking.

## SECTION 3. PHYSICAL DATA

Boiling point, 1 atm ..... 104°F (40°C)

Specific gravity, 25/25C .... 1.32

Vapor pressure @ 20°C, mmHg ..... 340

Volatiles, % ..... ca 100

Vapor density (Air=1) ..... 2.9

Evaporation rate ( $\text{CCl}_4=1$ ) ... 1.47

Solubility in water, wt. % @ 20°C ... 1.6

Freezing point ..... -140.8°F (-96°C)

Molecular weight ..... 84.94

**APPEARANCE & ODOR:** Colorless liquid with a penetrating ether-like, sweetish odor. The unfatigued recognition threshold for 100% of test panel is 214 ppm.

## SECTION 4. FIRE AND EXPLOSION DATA

Lower

Upper

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

None (T.C.C.)

1031°F (555°C)

Vol % at 100°C in O<sub>2</sub>

12

66.4

**EXTINGUISHING MEDIA:** Use extinguishing media that are appropriate for the surrounding fire. Use water spray to cool fire-exposed tanks/containers. When heated, methylene chloride forms weakly combustible mixtures in air. It will form flammable and explosive mixtures in an oxygen-enriched atmosphere. Methylene chloride has a high vapor pressure; when spilled, its vapor concentration in air may increase rapidly. Containers of methylene chloride may rupture violently during a fire.

Firefighters should wear self-contained breathing apparatus with face piece and full protective clothing. Vapors of methylene chloride can flow to low-lying areas.

## SECTION 5. REACTIVITY DATA

This material is stable at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization. Methylene chloride is incompatible with alkali metals including sodium-potassium alloy, finely powdered aluminum and magnesium, n-Methyl-n-nitroso-urea, and potassium hydroxide, and potassium tert-butoxide. Contact with these materials may cause violent reaction or explosion. Prolonged exposure to water may cause noticeable hydrolysis to highly corrosive hydrochloric acid when temperature is above 60°C. Avoid contact with oxidizing agents and caustics. In organic-enriched atmospheres or when heated (>100°C) vapors may be readily ignited. Exposure to high temperatures (from open flames, hot surfaces, welding arcs, etc.) can produce corrosive and toxic thermal oxidative decomposition products such as hydrogen chloride and small quantities of phosgene.

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GENIUM PUBLISHING

MK087405

MKIL20270

## SECTION 6. HEALTH HAZARD INFORMATION

TLV 100 ppm (see Section 2)

Methylene Chloride enters the body mainly by inhalation and skin absorption. Vapors of methylene chloride are narcotic and may cause toxic encephalopathy. Excessive inhalation of vapor (500-700 ppm for 3-5 hrs.) causes slight loss of coordination and equilibrium. Symptoms of overexposure can also include dizziness, nausea, tingling of extremities, stupor, lethargy, convulsions and diminished vision. Severe exposures may cause unconsciousness and death. Symptoms of overexposure to methylene chloride are usually delayed in onset. The liquid is irritating to the eyes and may cause burns if not promptly removed. Prolonged or repeated contact with the skin may cause redness, irritation, dermatitis, frostbite or burns. It may be absorbed through the skin in toxic amounts. Ingestion of methylene chloride causes irritation of the gastrointestinal tract and symptoms resembling those from inhalation of vapor. Long-term exposure to mild or moderate doses of methylene chloride may cause delayed onset (24-48 hrs.) of dizziness, headache, mental confusion, slurred speech, double vision and sleeplessness. Medical recovery may be slow. **NOTE:** Methylene chloride is stored in body fat and metabolizes to carbon monoxide, which increases and sustains carboxyhemoglobin levels in the blood, reducing its oxygen-carrying capacity. It may damage the liver, kidneys, or blood. Alert medical attendants to its secondary hazard.

**FIRST AID:** **EYE CONTACT:** Promptly flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention if irritation persists (in-plant, paramedic, or community). **SKIN CONTACT:** Flush exposed area with water while removing contaminated clothing. Get medical attention if irritation persists. **INHALATION:** Remove to fresh air. Restore and/or support breathing (O<sub>2</sub> therapy) as required. Keep warm and at rest. Get medical help. Advise physician not to use adrenalin. **INGESTION:** Get prompt medical help! Do not induce vomiting. If vomiting occurs spontaneously, position victim's head below trunk to resist aspiration hazard. Advise physician not to use adrenalin.

## SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Notify safety personnel of large spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Evacuate all personnel from the area except for those involved in clean-up. Remove leaking container to safe place if feasible. Absorb small spills with an absorbent material such as paper towel or vermiculite. Evaporate off solvent in an exhaust hood and place absorbent in a closed container for disposal. Dike large spills and collect for recovery or disposal. Pick up residue with absorbent (as with small spills) or flush to ground (not to sewer) to evaporate. Clean-up personnel should wear respiratory equipment and protective clothing to prevent inhalation of vapor and contact with skin/eyes. **DISPOSAL:** Reclaim waste solvent by filtration and distillation procedures. Place in closed containers for disposal by a licensed contractor, or burn in an approved incinerator. Methylene chloride is designated as a hazardous waste by the EPA. The EPA (RCRA) H.W. No. is 080 (40CFR261).

## SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation (explosion-proof) to meet TLV requirements. Floor level ventilation and sump ventilation may also be necessary. For emergency or non-routine exposures, wear an appropriate NIOSH-approved respirator. All electrical service in use or storage areas should have an explosion-proof design. When handling liquid, wear neoprene, PVA, or vitron gloves and safety glasses. In case of leak or spill or unusual handling where repeated or prolonged contact may occur, use protective clothing, apron, boots, and splash goggles or face shield as necessary. Remove contaminated clothing promptly and do not reuse until it has been properly laundered. Eye wash stations and safety showers should be readily available in use and handling areas. Contact lenses pose a special hazard; soft lenses absorb; all lenses concentrate irritants. **NOTE:** CO and CH<sub>2</sub>Cl<sub>2</sub> content of workplace air are additive and both must be monitored where methylene chloride exposures occur. Preplacement and annual physical exams should emphasize the nervous and respiratory systems, liver, kidneys, skin, eyes and carboxyhemoglobin levels. Those with a history of cardiovascular disease or who are heavy drinkers or smokers should avoid exposure to this material.

## SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, dry, well-ventilated area away from combustibles and sources of heat and ignition. Open containers slowly and with caution. Protect containers from physical damage. Keep containers and storage tanks free of water and moist air. Be careful when handling this compound. Use only with adequate ventilation. Don't breathe vapors. Avoid contact with eyes, skin and clothing. When methylene chloride vapors are drawn into the combustion chamber of a space heater, severe corrosion damage to the heater can occur, even at levels well below the TLV. LARC Review (1979) listed animal carcinogenic determination as indefinite. A substantial risk notice to EPA (TSCA, 8e) reports a high incidence of lung and liver tumors in mice in long-term inhalation studies at 2000-4000 ppm (1984, preliminary).

**DOT CLASSIFICATION:** ORM-A **DOT I.D. No.** UN1593 **LABEL:** None (or St. Andrew's Cross)

**IMO CLASS:** 6.1

**DATA SOURCE(S) CODE (See Glossary)** 1-12, 14, 16, 23, 25, 31, 34, 37, 38, 47, 48.R.

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**APPROVALS**

**INDUST. HYGIENE/SAFETY**

**MEDICAL REVIEW:**

JDR/Revised, 11/85

JW 11-85

Dec 84

# Material Safety Data Sheet

From Genium's Reference Collection  
Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



No. 61  
NITROGEN  
(Revision A)

Issued: April 1980  
Revised: April 1986

| SECTION 1. MATERIAL IDENTIFICATION   |                     | 21  |           |
|--|---------------------|---|-----------|
| <b>MATERIAL NAME:</b> NITROGEN<br><b>DESCRIPTION:</b> Gas supplied in cylinders (2000+ psig) or cold liquid supplied in vented Dewar containers.<br><b>OTHER DESIGNATIONS:</b> N <sub>2</sub> , CAS #7727-37-9, ASTM #D1933<br><b>MANUFACTURER/SUPPLIER:</b> Available from several suppliers, including:<br>Air Products & Chemicals, Inc., Industrial Gas Division, PO Box 538, Allentown, PA 18105; Telephone: (215) 481-4911<br>Airco Industrial Gases of the Boc Group, Inc., 575 Mountain Avenue, Murray Hill, NJ 07974; Telephone: (201) 464-81000<br>Union Carbide Corp., Linde Div., 39 Old Ridgebury Rd., Danbury, CT 06817; Telephone: (203) 794-5300   |                     | <b>HMS</b><br>H: 2<br>F: 0<br>R: 0<br><b>PPE*</b><br>*See Sect. 8<br><br>(Liquified)<br>R 1<br>I 1<br>S 2 (Liquid)<br>K 0 |           |
| SECTION 2. INGREDIENTS AND HAZARDS   |                     | HAZARD DATA   |           |
| Nitrogen, CAS #7727-37-9<br>Oxygen, CAS # 7782-44-7  | %<br>>99.5<br>< 0.5 | No TLV Established.   |           |
| SECTION 3. PHYSICAL DATA   |                     |   |           |
| Boiling Point, 760 mm Hg ... -320.4°F (-195.8°C)<br>Vapor Density (Air = 1) ... 0.967<br>Solubility in Water @ 20°C, Vols/100 vols. ... 1.6<br>Density (liq.), g/cm <sup>3</sup> ... 0.8<br>Melting Point ... -345.7°F (-209.86°C)<br>Critical Temperature ... -232.8°F (-147.1°C)<br>Critical Pressure, Atm ... 33.5<br>Molecular Weight ... 28.01<br>Expansion Ratio, Liquid to Gas @ 70°F ... 1:696<br>Appearance and odor: A colorless, odorless, tasteless gas or a cryogenic liquid.   |                     |   |           |
| SECTION 4. FIRE AND EXPLOSION DATA   |                     | LOWER   | UPPER     |
| Flash Point and Method   | Autoignition Temp.  | Flammability Limits in Air  |           |
| Not Found  | Not Found           | Nonflammable  | Not Found |
| Use extinguishing media that are appropriate to the surrounding fire. Do not discharge solid streams of water into liquid N <sub>2</sub> . Use water spray to cool fire-exposed containers or, if desirable, to increase the rate of evaporation of the liquid if the increased rate can be controlled (cryogenic liquid will rapidly freeze water). Nitrogen is a nonflammable material that will not support combustion. It presents no unusual explosion hazard unless the compressed gas is exposed to fire; then containers may rupture violently. Nitrogen cylinders are equipped with pressure-relief devices that are designed to vent N <sub>2</sub> when they are exposed to elevated temperatures and pressures. When liquid nitrogen is spilled it can release a rapidly vaporizing cloud that will create an oxygen-deficient atmosphere. |                     |   |           |
| SECTION 5. REACTIVITY DATA   |                     |   |           |
| Nitrogen is stable when stored in closed containers. It does not polymerize. Nitrogen is noncorrosive and is nearly inert at room temperature. At high temperatures it can combine with oxygen to form oxides, and with hydrogen to form ammonia. When heated with carbon in the presence of alkalis or barium oxide it may form cyanides. It can form nitrides with lithium, silicon, calcium, strontium, and barium when it is at a red heat. It has been reported that nitrogen can be oxidized explosively by ozone. Lithium and titanium at an elevated temperature can burn in a nitrogen atmosphere. Beryllium can be ignited in a mixed nitrogen-and-carbon dioxide atmosphere. Nitrogen will react with oxygen in the presence of sparking (from an electric arc or a gas-fired furnace) to produce nitric oxide gas.                         |                     |   |           |

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**SECTION 6. HEALTH HAZARD INFORMATION**

Nitrogen is not listed as a carcinogen by the NTP, IARC, or OSHA.

This material is nontoxic and is classified as a simple asphyxiant by virtue of its displacement of oxygen. Symptoms of exposure depend on the degree and the duration of oxygen deficiency. They can include increased frequency and volume of breathing, increased pulse rate, muscular incoordination, fatigue, nausea, vomiting, and collapse. Inhalation of pure nitrogen atmosphere produces immediate loss of consciousness; death follows unless air/oxygen breathing can be quickly restored. Contact with liquid nitrogen or cold vapors can cause cryogenic burns (severe frostbite/freeze burns).

**FIRST AID: CONTACT WITH LIQUID NITROGEN:** Promptly flush areas affected with lots of tepid water to reduce freezing of tissue. (Do not apply direct heat to affected areas!) Do not rub frozen areas. Loosely apply dry, sterile, bulky dressings to protect area from infection and from further injury. Get medical help.\*

**INHALATION:** Caution! Would-be rescuers need to be concerned with their own safety in oxygen-deficient areas. Use self-contained breathing equipment. Remove victim to fresh air. Quickly restore and/or support his breathing as required, administering oxygen if available. Get medical help.\*

**INGESTION:** Get medical help.\* **ACUTE EFFECTS:** Gas - Simple asphyxiation by displacement of oxygen. Liquid - Cryogenic burns. **PRIMARY ENTRY:** Inhalation

\* GET MEDICAL ASSISTANCE = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

Notify safety personnel of major nitrogen leaks or spills. Shut off leak if you can do so without risk. Evacuate all personnel from the danger area until ventilation can restore a safe oxygen level. Emergency personnel need self-contained breathing equipment. Minor leaks (which are dangerous in enclosed areas) can be detected by painting the suspected area of leakage with a soap solution. Prevent liquid nitrogen from contacting vulnerable steel structures and vehicle tires (see sect. 9). Allow spilled liquid to evaporate.

**DISPOSAL:** Remove a liquid nitrogen container or leaking cylinder outdoors or place into a hood with good forced ventilation. Allow gas to discharge at a moderate rate. Defective cylinders should be tagged to indicate defect. Close the valve and return the defective cylinder to supplier.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Provide adequate general and local exhaust ventilation to prevent workplace atmospheres from becoming oxygen deficient (minimum O<sub>2</sub> volume = 18%). Provide air-supplied or self-contained breathing equipment for emergency or nonroutine situations where the nitrogen level is excessive. Use a safety line and a standby worker when respirator-protected personnel enter a hazarded nitrogen-enriched area. (The standby worker should have a self-contained breathing apparatus immediately available.) Those working with liquid nitrogen should wear approved insulating gloves, safety glasses, and other protective clothing as required by use conditions to prevent any skin contact with liquid nitrogen. Cuffless trousers should be worn outside high-topped shoes. Safety shoes are recommended for those handling cylinders of gases.

Wear safety gloves and approved insulated gloves. Use air-supplied or self-contained breathing apparatus.

Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**STORAGE SEGREGATION:** Store in a cool, dry, well-ventilated, low fire-risk area. Protect containers against physical damage.

**SPECIAL HANDLING/STORAGE:** Protect containers from extremes of temperature and weather. (Do not allow any part of a compressed gas cylinder to be exposed to temperatures above 125°F [51.6°C]). Follow general safety procedures for handling and securing compressed gas cylinders. Liquid nitrogen storage areas should be kept clean and free from flammable materials. Make sure that liquid nitrogen containers are properly vented to prevent buildup of pressure. All pressure equipment and process lines should be designed so that the minimum burst pressure is at least four (4) times the expected maximum pressure. Certain materials are unsuitable for service in contact with liquid nitrogen because they become extremely brittle and can be readily shattered by impact.

DOT Classification: Nonflammable Gas

UN1066 (Compressed); UN1977 (Cryogenic Liquid)

LABEL: Nonflammable Gas

Data Source(s) Code: 1, 4-11, 14, 17, 25, 51, 63, 82, 84. CK

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Approvals *J.D. Amador* 1/87.

Indust. Hygiene/Safety *DW* 12-86

Medical Review *[Signature]*

# Material Safety Data Sheet

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1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
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No. 314

TRICHLOROTRIFLUOROETHANE

Issued: February 1986

## SECTION 1. MATERIAL IDENTIFICATION

**MATERIAL NAME:** TRICHLOROTRIFLUOROETHANE

**OTHER DESIGNATIONS:** 1,1,2-Trichloro-1,2,2-Trifluoroethane,  $\text{FCI}_2\text{CCCIF}_2$ ; CAS #0076-13-1.

**TRADE NAMES:** All registered, ARKLONE P-113 (Alpha Metals); BLACO-TRON TF (Baron-Blakeslee); FREON TF, FREON 113 (du Pont); FRIGEN 113TR-T (Hoechst AG); GENETRON 113, GENESOLV D (Allied Corp.); ISOTRON 113, REFRIGERANT 113 (Pennwalt Corp.); UCON 113 (Union Carbide).

**MANUFACTURER:** Available from many suppliers, including: SCM Specialty Chemical, PO Box 1466, Gainesville, FL 32602; Telephone: (800) 331-6313

HMS

H: 1

F: 0

R: 0

PPE: \*

\* See Sect. 8



Not Found

## SECTION 2. INGREDIENTS AND HAZARDS

%

### HAZARD DATA

TRICHLOROTRIFLUOROETHANE

ca 100

8-hr TWA 1000 ppm or  
7600  $\text{mg}/\text{m}^3$

Human, Inhalation, TCLo: 4500 ppm  
(Central Nervous System)

Rat, Oral, LDLo: 45  $\text{mg}/\text{kg}$

\* Current OSHA PEL and ACGIH (1985-86) TLV.

## SECTION 3. PHYSICAL DATA

Boiling Point, 1 atm ... 117.6°F (47.6°C)

Vapor Pressure @ 70°F; mm Hg ... 285

Vapor Density (Air = 1) ... ca 6

Solubility in  $\text{H}_2\text{O}$  @ 70°F, % ... 0.028

Specific Gravity (20/4°C) ... 1.57

Volatiles, % ... ca 100

Evaporation Rate (Acetone = 1) ... 0.45

Melting Point ... -35°C to -36°C

Molecular Weight ... 187.39

**Appearance and odor:** Clear, colorless liquid with a slight ethereal odor whose recognition threshold (100% of test panel for UCON-113) is 135 ppm in air. (Vapor may be detected below 50 ppm, unfatigued.)

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

NA

NA

NA

NA

NA

**EXTINGUISHING MEDIA:** Use whatever is appropriate for surrounding fire. This is a nonflammable material. Vapors are five times heavier than air. High concentrations may tend to accumulate in low-lying areas. Very high concentrations can dilute available oxygen in the air below levels necessary to sustain life.

Fire fighters should wear self-contained breathing apparatus and fully protective clothing against suffocating vapors and toxic and corrosive products of decomposition.

## SECTION 5. REACTIVITY DATA

This is a very stable material in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization.

Prevent exposure to alkali or alkaline earth metals such as sodium, potassium, etc. Aluminium, zinc, magnesium, and beryllium may also be reactive, especially in the finely ground or powdered state or at high temperatures.

Thermal-oxidative degradation can produce toxic and corrosive materials such as halogens, halogen acids, and carbonyl halides.

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**SECTION 6. HEALTH HAZARD INFORMATION | TLV**

High concentrations of trichlorotrifluoroethane vapors may cause asphyxiation due to dilution of available oxygen in air below levels necessary to sustain life. Exposures greater than 2500 ppm can produce central nervous system depression, with psychological and psychomotor interference (disorientation and incoordination). Symptoms can include lightheadedness, giddiness, disorientation, shortness of breath, and possible cardiac arrhythmias. Vapors may have little or no effect on the eyes, but liquid contact may cause irritation and mild conjunctivitis. Repeated or prolonged contact with skin may cause defatting and possible dermatitis.

Trichlorotrifluoroethane has not been listed as a carcinogen by the NTP, IARC, or OSHA.

**FIRST AID: EYE CONTACT:** Flush thoroughly with running water for 15 minutes (including under eyelids). **SKIN**

**CONTACT:** Remove contaminated clothing. Flush affected area with water. Treat for frostbite if symptoms are present.

**INHALATION:** Remove to fresh air. Restore and/or support breathing as needed. If products of thermal-oxidative decomposition (see Sect. 5) have been inhaled, observe victim for signs of pulmonary edema. **INGESTION:** Seek physician. Seek prompt medical assistance for further treatment, observation, and support. \* DO NOT USE epinephrine or similar drugs, for they can produce cardiac arrhythmias, including ventricular fibrillation.

\* GET MEDICAL HELP - In plant, paramedic, community.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

Notify safety personnel of leaks or spills. Remove sources of heat or ignition. Provide adequate ventilation. Clean-up personnel to use self-contained respirator and protective clothing. Stop leakage if possible; remove leaking containers to safe area for discharge and allow to evaporate in an area remote from buildings and people. Residues or small spills can be picked up with an absorbent (vermiculite, dry sand) and placed in a covered metal container for disposal.

**DISPOSAL:** Material can be reclaimed by filtration and distillation process or disposed of by a licensed solvent waste disposal firm. Avoid discharge to environment when possible. Return scrap to supplier, if possible. Follow Federal, state, and local regulations.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Provide adequate mechanical ventilation to keep vapors below the TLV level. Supply ventilation for ramps and low-lying areas where the dense vapors of this material may collect. Local exhausts should be used where large amounts are released. Use approved self-contained or air-supplied breathing apparatus and lifelines for emergencies. Use chemical safety goggles and/or face shield to prevent liquid contact with eyes where splashing is possible. Wear neoprene or polyvinyl alcohol gloves and clothing appropriate for the work situation to minimize skin contact with liquid.

Eyewash stations and safety showers should be readily accessible near areas of use.

Contact lenses may pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

Vaporization of excessive amounts can displace oxygen necessary for breathing and may cause suffocation when used in confined spaces or areas without ventilation. Make sure that confined or enclosed spaces are safe prior to entry.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

Store in closed, steel containers in a cool (below 125°F), dry, well-ventilated area away from open flame, arc welding, and high-temperature surfaces. Protect containers from physical damage. High-density vapors may displace air and present an asphyxiation hazard. Concentrations well below the TLV level can damage space heaters when drawn into the combustion chamber. Heater should have independent air supply.

Prevent skin and eye contact with liquid. Avoid inhalation of vapors. Products of thermal decomposition can form halogen acids that have very sharp, stringent effects and can be detected by odor. Such odor is a hazard warning; when detected, immediately evacuate and ventilate the area. Monitor halocarbons and oxygen levels in the work area.

Data Source(s) Code: 1, 2, 4, 7, 8, 12, 21, 26, 38, 47, 82, 84, CK

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Approvals

JOR Accrocia, 6/86

Indust. Hygiene/Safety

D/22 6/86

Medical Review

[Signature] 86

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GENIUM PUBLISHING CORP.

No. 322  
DIETHYLENE GLYCOL  
MONOBUTYL ETHER  
(Revision B)  
Issued: September 1978  
Revised: February 1987

## SECTION 1. MATERIAL IDENTIFICATION

22

**MATERIAL NAME:** DIETHYLENE GLYCOL MONOBUTYL ETHER

**OTHER DESIGNATIONS:** Diethylene Glycol n-Butyl Ether; 2-(2-Butoxyethoxy) ethanol;  
 $\text{CH}_3(\text{CH}_2)_3(\text{OC}_2\text{H}_4)_2\text{OH}$ ;  $\text{C}_4\text{H}_9\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OH}$ ; CAS #0112-34-5

**TRADE NAMES AND MANUFACTURER:** Butyl CARBITOL® (Union Carbide),

POLY-SOLV DB® (Olin), DOWANOL DB® (Dow), Butyl DIOXTOL® (Shell).

**MANUFACTURER/SUPPLIER:** Dow Chemical USA, 2020 Dow Center, Midland, MI 48640;

Telephone: (517) 636-1000

Union Carbide, Old Ridgebury Rd., Danbury, CT 06817; Telephone: (203) 794-2000

Olin Corp., 120 Long Ridge Rd., Stamford, CT 06904; Telephone: (203) 356-2000

Shell Chemical Co., Chemical Sales, 1-Shell Plaza, Houston, TX 77002; Telephone: (713) 241-6161

HMIS

H 1

F 1

R 0

PPE\*

R 1

I -

S 1

\*See Sect. 8 K 1



## SECTION 2. INGREDIENTS AND HAZARDS

%

## HAZARD DATA

Diethylene Glycol Monobutyl Ether, CAS #0112-34-5

ca 100

No TLV Established.

Rat. Oral, LD<sub>50</sub>:  
6.56 g/kg\*

Rabbit, Skin, LD<sub>50</sub>:  
4.12 g/kg\*

\* The acute doses indicated are over four times as large as for  
2-butoxyethanol (Genium MSDS 320).

## SECTION 3. PHYSICAL DATA

Boiling Point ... 446°F (230°C)

Vapor Pressure, 20°C, mm Hg ... 0.01

Vapor Density (Air = 1) ... 5.6

Viscosity @ 20°C ... 0.0649 Poise

Solubility in Water @ 25°C, % ... Complete

Specific Gravity, 20/20°C ... 0.954

Melting Point ... -90.4°F (-68.0°C)

Evaporation Rate (n-BuAc = 1) ... 0.01

Molecular Weight ... 162.26

Appearance and odor: Water-white liquid; pleasant, characteristic, ethereal odor.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temperature

Flammability Limits in Air

214°F (101°C), TCC

442°F (228°C)

% by Vol. @ 25°C

0.9

6.2

**EXTINGUISHING MEDIA:** Use a dry chemical, carbon dioxide, foam, water spray, or fog to extinguish diethylene glycol monobutyl ether fires. This material is an OSHA class IIIB combustible liquid. Its vapors are heavier than air and can flow along surfaces to ignition sources and flash back. If you can do so without risk, remove this material from the fire area. It is a low fire hazard unless it is heated.

Water or foam may cause frothing. Water spray may be used to flush spills away from exposures and to dilute spills to noncombustible mixtures. Use a smothering technique to extinguish fire. Fire fighters should use self-contained breathing apparatus and wear fully protective clothing.

## SECTION 5. REACTIVITY DATA

Diethylene glycol monobutyl ether is stable. Hazardous polymerization cannot occur.

This material is incompatible with strong oxidizing agents. Avoid contaminating it with high concentrations of alkalis at elevated temperatures.

Thermal oxidative degradation of this material may produce carbon monoxide and/or carbon dioxide.

**SECTION 6. HEALTH HAZARD INFORMATION | TLV**

Diethylene glycol monobutyl ether is not listed as a carcinogen by the NTP, IARC, OSHA, or ACGIH.

**SUMMARY OF RISKS:** The information that is available suggests caution in handling this material, especially where repeated exposures may be expected. Eye contact with the liquid will cause moderate irritation and transient corneal injury. Skin contact will defat the skin and cause minor irritation. It can be absorbed through the skin; however, the acute toxicity through skin absorption is slight. Inhalation of mists or vapors of this material will cause irritation of the upper respiratory tract. **TARGET ORGANS:** Skin, upper respiratory tract, eyes. **PRIMARY ENTRY:** Inhalation, skin. **ACUTE EFFECTS:** Irritation to the eyes, skin, and upper respiratory system. **CHRONIC EFFECTS:** None known.

**FIRST AID:** **EYE CONTACT:** Flush eyes thoroughly, including under the eyelids, with running water for 15 minutes. **SKIN CONTACT:** Remove contaminated clothing. Flush affected area with water; wash with soap and water. **INHALATION:** Remove victim to fresh air. Restore and/or support his breathing as required. Get medical help.\* **INGESTION:** Get medical help.\* If conscious, give victim several glasses of water or milk to drink to dilute the material. Induce vomiting. Keep victim's head below his hips while he is vomiting to prevent him from aspirating his vomitus.

\* **GET MEDICAL ASSISTANCE** = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

Notify safety personnel of diethylene glycol monobutyl ether leaks or spills. Provide ventilation. Remove sources of heat or ignition. Cleanup personnel should use protection against inhalation of vapors and contact with liquid. When necessary, contain spills using an absorbent material (dry sand, earth, vermiculite). Pick up spill and place waste in an appropriate container for disposal. Remove large spills with a vacuum truck or by pumping the waste into salvage tanks. Flush trace residue with much water. Do not flush to sewers or open waterways.

Waste may be burned in an approved incinerator or disposed of by a licensed waste solvent disposal company. Follow Federal, state, and local regulations.

Aquatic Toxicity Rating : TLm 96: 100-10 ppm

EPA, Clean Water Act, Reportable Spill Quantity: Not Listed

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Wear impermeable gloves and other additional protective clothing suitable to use conditions to prevent prolonged or repeated contact with skin. Wear safety goggles and/or faceshield for eye protection where splashing is possible. Remove contaminated clothing and launder it before wearing it again. Eyewash stations and washing facilities should be available to areas of use and handling.

Provide general ventilation in areas of use. Local exhaust ventilation should be used for misting conditions or when vapors are released into the work environment. Use an approved organic-canister mask or self-contained breathing equipment for nonroutine and emergency situations.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

Store diethylene glycol monobutyl ether in closed containers in a cool, dry, well-ventilated area away from sources of heat or ignition and separately from oxidizing agents or alkalis. Protect containers from physical damage.

Keep containers closed when not in use. Store and handle them as you would OSHA class IIB combustibles. Avoid breathing vapors and prolonged or repeated contact of this material with skin. Prevent eye contact with liquid. Wash thoroughly after handling. When using cold diethylene glycol monobutyl ether without misting conditions, general ventilation is sufficient because of the material's low vapor pressure.

Diethylene glycol monobutyl ether is not designated as a hazardous substance by the EPA (40 CFR 116).

DOT Classification: Combustible Liquid DOT ID No. Not Listed

Data Source(s) Code: 1, 4-8, 14, 23, 82, 84. CK

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Approval: *[Signature]* *[Date]*

Indust. Hygiene/Safety *[Signature]* *4/87*

Medical Review *[Signature]* *11/11/87*

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GENIUM PUBLISHING CORP.

No. 323

ETHYLENE GLYCOL  
(Revision C)  
Issued: November 1980  
Revised: August 1988

## SECTION 1. MATERIAL IDENTIFICATION

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Material Name: ETHYLENE GLYCOL

Description (Origin/Uses): Used as an antifreeze in heating and cooling systems; as an industrial humectant (a substance that promotes retention of moisture); as a solvent in the paint and plastics industries; in the formulation of inks; in the synthesis of safety explosives, plasticizers, elastomers, synthetic fibers (Dacron), and in synthetic waxes.

Other Designations: 1,2-Ethanediol;  $C_2H_6O_2$ ; CAS No. 0107-21-1

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

|              |      |
|--------------|------|
| HMIS         | NFPA |
| H 2          | R 1  |
| F 1          | I 3  |
| R 0          | S 2  |
| PPG*         | K 1  |
| *See sect. 8 |      |



## SECTION 2. INGREDIENTS AND HAZARDS

%

## EXPOSURE LIMITS

Ethylene Glycol, CAS No. 0107-21-1

Ca 100

ACGIH TLV, 1987-88

TLV-Ceiling: 50 ppm, 125 mg/m<sup>3</sup> (Vapor and Mist)

### Toxicity Data\*

Human, Oral, LD<sub>50</sub>: 786 mg/kg

Human, Inhalation, TC<sub>50</sub>: 10000 mg/kg

\*See NIOSH, RTECS (KW2975000), for additional data with references to reproductive, irritative, and mutagenic effects.

## SECTION 3. PHYSICAL DATA

Boiling Point: 387°F (197°C)

Melting Point: 9°F (-13°C)

Vapor Pressure: 0.06 Torr at 68°F (20°C)

Water Solubility (%): Miscible

Molecular Weight: 62 Grams/Mole

Specific Gravity ( $H_2O = 1$ ): 1.1135 at 68°F (20°C)

Appearance and Odor: A clear, colorless, syrupy, hygroscopic liquid; odorless; sweet taste. (Caution: This is a poisonous material; do not taste it.)

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temperature

Flammability Limits in Air

240°F (115°C)

748°F (398°C)

% by Volume

3.2

Not Found

Extinguishing Media: Use dry chemical, carbon dioxide, water spray, or "alcohol" foam (especially for large fires). Use a water spray to cool fire-exposed containers, to flush spills away from sensitive exposures (sources of ignition), or to dilute spills to nonflammable mixtures.

Unusual Fire or Explosion Hazards: Ethylene glycol that is heated or misted into the air presents a moderate fire and explosion hazard.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

## SECTION 5. REACTIVITY DATA

Ethylene glycol is a stable, noncorrosive liquid during routine work operations; however, its flammability hazards increase when ethylene glycol is heated or misted into the air during nonroutine work operations. It cannot undergo hazardous polymerization.

Chemical Incompatibilities: Ethylene glycol can react dangerously with chlorosulfonic acid, oleum, sulfuric acid, and strong oxidizing agents.

Conditions to Avoid: Avoid direct contact with incompatible chemicals or exposure to sources of ignition.

Hazardous Products of Decomposition: Toxic gases such as carbon monoxide (CO) can be produced during fires involving ethylene glycol.

**SECTION 6. HEALTH HAZARD INFORMATION**

Ethylene glycol is not listed as a carcinogen by the NTP, IARC, or OSHA.

**Summary of Risks:** Ethylene glycol is poisonous by ingestion, inhalation, and skin absorption. Its effects are similar to those of ethyl alcohol intoxication: stimulation followed by depression of the central nervous system (CNS). Inhalation of ethylene glycol vapor or mist can cause irritation of the upper respiratory tract, or URT, (difficulty in breathing, coughing, burning in chest, or pulmonary edema).

Ingestion, if not fatal, can cause lack of appetite, spastic motion of the eyeballs, dizziness, abdominal pain, respiratory arrest or cardiovascular collapse, coma, or acute renal failure with uremia. Skin absorption can also contribute to the systemic poisoning. People who drank 3 to 4 ounces of ethylene glycol and survived the initial acute effects because of quick emergency response died later (3 to 17 days) from kidney failure. **Medical Conditions Aggravated by Long-Term Exposure:** None reported. **Target Organs:** Kidneys, CNS, URT, eyes. **Primary Entry:** Inhalation, skin contact/absorption. **Acute Effects:** Irritation of the eyes, nose, throat, and URT. **Chronic Effects:** None reported.

**FIRST AID:** **Eyes:** Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. **Skin:** Rinse the area with water and then wash it with soap and water. **Inhalation:** Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have medical personnel administer oxygen as required. **Ingestion:** Give the exposed person three glasses of milk or water to drink; induce vomiting at once.

**GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES.** Seek prompt medical assistance for further treatment, observation, and support after first aid. **NOTE TO PHYSICIAN:** Carefully monitor fluids and electrolytes. Prevent oxalate deposition by forcing diuresis. Correct metabolic acidosis. Delayed (12 to 24 hours) cardiopulmonary effects such as tachypnea (increased rate of respiration), tachycardia (rapid heart action), mild hypertension, cyanosis, and cardiac failure with pulmonary edema are possible. Urinalysis for oxalic acid, a metabolic product of absorbed ethylene glycol, can be used to diagnose poisoning by ingestion. Monitor the functions of the kidneys, heart, respiratory system, and the CNS. Intravenous ethanol therapy may inhibit formation of toxic metabolites.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**Spill/Leak:** Notify safety personnel; provide adequate ventilation. Normal ventilation may be acceptable if the ethylene glycol liquid is at room temperature and is not misted into the air. Cleanup personnel need protection against skin contact with the liquid and inhalation of its vapor (see sect. 8). Contain large spills and collect waste. Wash residues of small spills to a sewer with large quantities of water.

**Waste Disposal:** Large quantities of ethylene glycol may be disposed of by mixing the material with more flammable solvents and atomizing the mixture into an incinerator. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations. Consider recycling or destruction of this material.

**OSHA Designations**

Air Contaminant (29 CFR 1910.1000 Subpart Z): Not Listed

EPA Designations (40 CFR 302.4): Not Listed

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**Goggles:** Always wear protective eyeglasses or chemical safety goggles. Where splashing of ethylene glycol is possible, wear a full face shield. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Wear a NIOSH-approved respirator per the NIOSH Pocket Guide to Chemical Hazards (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (spills or cleaning reactor vessels and storage tanks), wear an SCBA. **Warning:** Air-purifying respirators will not protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, and gauntlets, etc., to prevent excessive or prolonged skin contact. **Ventilation:** Install and operate general and local exhaust-ventilation systems powerful enough to maintain airborne levels of ethylene glycol below the ACGIH TLV cited in section 2. Design all ventilation systems to be explosion proof in order to minimize sources of ignition. Airborne concentrations of this material are likely to be low because of its low vapor pressure unless it is heated. **Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area. Avoid skin contact with this material; do not inhale its vapor or mist.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**Storage/Segregation:** Store ethylene glycol in closed containers in a cool, dry, well-ventilated area away from sources of ignition and incompatible chemicals (see sect. 5). Some containers can affect the color of this material; to avoid this, use resin-coated steel, glass, aluminum, or stainless steel containers for storage. Otherwise, mild steel is sufficient. Keep containers tightly closed to prevent moisture contamination.

**Special Handling/Storage:** Protect containers from physical damage. Test a small amount of ethylene glycol for moisture content before using this material in bulk operations.

**Comments:** Ethylene glycol is poisonous; do not take it internally. Toxic airborne concentrations are not likely to occur at room temperature; however, heated and mechanically agitated solutions are likely to produce enough airborne ethylene glycol vapor to cause poisoning in exposed workers. These situations require effective local exhaust-ventilation systems.

**Transportation Data (49 CFR 172.101-2):** Not Listed

**References:** 1, 84, 86-94, 100, 112, 113, 114.

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# MATERIAL SAFETY DATA SHEET

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NO. 15A

CHRYSTOTILE ASBESTOS

Date November 1979

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: CHRYSTOTILE ASBESTOS

DESCRIPTION: A crystalline serpentine mineral, or layered, hydrated magnesium silicate in fine fiber form (asbestiform). The end of a sliver of this material with a cross-section of 0.1 mm<sup>2</sup> can show about 20 million tubules (scroll-like fibrils about 0.01 μm diameter) in approximate parallel orientation. It is possible to strip from a fiber bundle very fine chrysotile threads, each an agglomerate of hundreds or thousands of hollow fibrils. (90% of asbestos used is chrysotile.)

OTHER DESIGNATIONS: Asbestos, CAS #001 332 214, GE Material D4E11

## SECTION II. INGREDIENTS AND HAZARDS

Idealized Chrysotile (unit cell) -  $Mg_3Si_2O_5(OH)_4^*$

ca 95

### HAZARD DATA

8-hr TWA 2 fibers/cc,\*  
Ceiling 10 fibers/cc,  
(>5 μm in length)  
"Asbestos"  
Human, inhal.  
IDL<sub>50</sub> 1.2 fb/cc for  
19 years  
(Pulmonary effects)

\*Impurities include low levels of Mn, Fe<sup>+2</sup>, Fe<sup>+3</sup>, and Al in the structure, replacing randomly 4% av. of the Mg atoms. Impurities depend on the mineral source; the unit cell hydroxyl content can also vary with an average of 4.25.

\*\*Current OSHA TLV. OSHA (1975) proposed TLV of 0.5 fb/cc with a Ceiling of 5 fb/cc (15 min. sample). NIOSH (1976) proposed 0.1 fb/cc. ACGIH (1979 Intended Changes List) has retained TLV of 2 fb/cc for chrysotile asbestos. Asbestos is carcinogenic and/or co-carcinogenic for humans!

## SECTION III. PHYSICAL DATA

Melting point ----- Decomposes (see Sect. V)

Vapor pressure ----- Nil

Water solubility ----- Insoluble (slowly breaks down in hot water)

Appearance: White, fibrous solid, as long flexible textile fibers down to dust-like filler power. (Milled chrysotile asbestos (powder-like) has an aspect ratio (ratio of length/diameter) as high as 50 for most particles.)

## SECTION IV. FIRE AND EXPLOSION DATA

LOWER UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

N/A

N/A

N/A

This material is not combustible in air. Use extinguishing media as appropriate for the surrounding materials in a fire situation.

## SECTION V. REACTIVITY DATA

This material is inert under ordinary room temperature and heated use conditions. It is resistant to heat, but it will decompose and alter its microscopic fiber structure (see Sect. I) above 600 C (1112 F): Chrysotile dehydroxylates at 600-780 C; the "asbestos anhydride" in turn breaks down to mixture of silica (SiO<sub>2</sub>) and forsterite (Mg<sub>2</sub>SiO<sub>4</sub>) at 800-850 C. Above 1000 C (1832 F) magnesium pyroxenes are formed which melt at about 1450 C.

Strong acids can attack chrysotile and rapidly extract its MgO and H<sub>2</sub>O content; it can be decomposed by glacial acetic acid. Hot water slowly breaks down chrysotile. It, like other forms of asbestos, resists strong alkali (5 M NaOH at least up to 100 C).

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|   |   |
|---|---|
| SECTION VI. HEALTH HAZARD INFORMATION   | TLV 2 fibers/cc<br>>5 um in length (See Sect. II) |
| <p>As a particulate material, chrysotile asbestos can be irritating to the respiratory tract, skin or eyes. However, the significant industrial hazards arise from excessive dust inhalation with damage requiring years to become evident. Chronic inhalation of high levels of asbestos particles can produce asbestosis, a disabling fibrosis of the lungs which gradually reduces lung capacity and efficiency. (Usually over 4 years is required for a serious condition to develop.) Excessive inhalation can also cause pleural plaque, a thickening of the lung lining. Compliance with TLV is expected to control these hazards. Cancer can result from excessive inhalation of asbestos particulate, which may require decades to develop. Lung cancer is a special risk to those who smoke cigarettes regularly in addition to having asbestos exposure. Rare mesotheliomas of the pleura and peritoneum (lining around the lungs or abdominal cavity) and possibly cancers of the GI tract and larynx (also smoking related) have been associated with inhalation exposure to asbestos particles. (Crocidolite asbestos has been suggested as the major mesothelioma risk.) In groups of workers exposed to asbestos, lung cancer death is 3 or 4 times more common than mesothelioma death, and 97.5% of asbestos-related lung cancers occur with those workers who also smoke cigarettes. For non-smokers asbestos exposure increases risk of lung cancer 5X.</p> |   |
| SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES   |   |
| <p>Notify safety personnel of spills! Exclude all from spill area except trained clean-up personnel who have approved respiratory protection against dust. Provide exhaust ventilation with capture filtration, but do not stir up the dust. Use a wet method or an approved vacuum cleaning system to pick up spills. The techniques used must collect particulate without dispersing dust into the air. Waste must be placed in dust-tight containers or sealed plastic bags for disposal. Label properly!</p> <p>DISPOSAL: Deposit waste containers in a secured landfill where asbestos will remain buried. Follow Federal, State and local regulations. Also note that chrysotile can be converted into non-asbestos waste by heating at high temperature (see Sect. V).</p>   |   |
| SECTION VIII. SPECIAL PROTECTION INFORMATION  |   |
| <p>Provide exhaust ventilation and capture filtration to remove airborne asbestos particulate from the workplace (as much as possible) without dispersing it into the environment. Isolate work areas (also post signs) where asbestos particulate may occur at excessive levels.</p> <p>For nonroutine or emergency conditions where excessive dust is present, approved respirators must be used: Single use or re-usable air-purifying respiratory up to 10X TLV; full-facepiece powered air-purifying respirator up to 100X TLV; full-facepiece air-supplied (continuous flow or pressure-demand type) respirator above 100X TLV.</p> <p>Depending on exposure levels, it may be necessary to provide body-covering work clothes, special vacuuming facilities for clothes and suitable laundering or disposal arrangements, change areas with dual locking facilities, showers before changing to street clothing after work, etc. Be sure workers do not carry asbestos dust home on their clothing or person. Prevent asbestos dust from being carried to rest rooms, to eating areas, to non-asbestos workplaces, etc.</p>  |   |
| SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS  |   |
| <p>Score asbestos in closed containers (dust tight) in a clean, secure area. Protect containers from physical damage. Do not open containers that can release asbestos dust without providing proper enclosure or control measures. Use dust suppression control measures at all stages of asbestos handling, use and disposal. Follow good housekeeping practices to prevent accumulations of asbestos-containing dust. Avoid inhalation of asbestos. The effects on cancer incidence of chronic exposure are not yet fully known. Monitor areas where asbestos dust is present to be sure of worker exposure levels; keep records to define exposures and retain for at least 20 years. Provide preplacement and annual medical examinations for those exposed in the workplace to 8-hr TWA of 0.1 asbestos fibers or more/cc which are &gt;5 um in length. Retain medical records for at least 20 years.</p>   |   |
| DATA SOURCE(S) CODE: 2-4, 6, 12, 14, 20, 26, 32   | APPROVALS: MIS, CRD <i>J. M. J.</i>               |
| <small>Asbestos is to the toxicity of information herein for purchaser's purposes and necessary precautions a responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Company assumes no responsibility, liability or representation and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small>  | Industrial Hygiene and Safety                     |
|   | MEDICAL REVIEW: 12/79                             |

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# MATERIAL SAFETY DATA SHEET

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NO 10  
HYDROGEN CHLORIDE,  
ANHYDROUS  
Revision A  
DATE June 1986

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: HYDROGEN CHLORIDE, ANHYDROUS

DESCRIPTION: A gaseous material, usually supplied in a cylinder as a liquid under its own vapor pressure (~600 psig at 20C) or as compressed gas.

OTHER DESIGNATIONS: Hydrogen Chloride; HCl; Hydrochloric Acid, Anhydrous;

CAS #007 647 010

MANUFACTURER: Available from many suppliers.

## SECTION II. INGREDIENTS AND HAZARDS

Hydrogen Chloride (HCl)

%

HAZARD DATA

>99

8-hr TWA 5 ppm or  
7 mg/m<sup>3</sup> (C)\*

\*Current OSHA PEL and ACGIH (1983) TLV Ceiling Level.

Human, Inhalation  
LCLo 1000 ppm/1M

Mammal, Inhalation  
LCLo 1000 ppm/2H

## SECTION III. PHYSICAL DATA

|   |     |                           |         |
|---|-----|---------------------------|---------|
| Boiling pt, 1 atm, deg C                | -85 | Vapor pressure, 20 C, atm | 41.6    |
| Water solubility, 1 atm, approx. wt. %: |     | Vapor density (Air=1)     | 1.27    |
| 0 deg C                                 | 45  | Freezing pt, 1 atm, deg C | ca -114 |
| Room Temperature                        | 37  | Critical temp, deg C      | 51.4    |
| 110 deg C                               | 20  | Molecular weight          | 36.46   |

Appearance & Odor: A colorless, acidic gas with a pungent, suffocating odor. It fumes strongly in moist air. Good warning properties for voluntary removal from exposure: 1-5 ppm detectable by smell; at 5-10 ppm odor becomes disagreeable and irritating.

## SECTION IV. FIRE AND EXPLOSION DATA

Lower

Upper

| Flash Point and Method | Autoignition Temp | Flammable Limits in Air | Lower | Upper |
|------------------------|-------------------|-------------------------|-------|-------|
| Nonflammable gas       | N/A               | N/A                     | -     | -     |

Extinguishing media: Select that suitable for surrounding fire.

This material is not flammable; but it can produce hydrogen gas upon reaction with certain metals, such as iron, in the presence of moisture.

If cylinders of this material are present in a fire situation, they should be removed if feasible or cooled with a water spray to prevent release of HCl by the fusible plug and pressure rupture disc safety devices of HCl cylinders.

Firefighters should use self-contained breathing apparatus and full body protection.

## SECTION V. REACTIVITY DATA

HCl is a stable gas as confined in its cylinder at room temperature. It is strongly acidic and reactive. It does not polymerize, but it can catalyze some polymerizations. HCl dissolves exothermically in water to form aqueous hydrochloric acid. It is incompatible with alkaline materials, including metal oxides, hydroxides, amines, NH<sub>3</sub>, reacting to form chloride salts.

It is corrosive to many metals when moisture is present, liberating flammable hydrogen gas on reaction. It is not corrosive to steel when dry.

HCL can react exothermically with many organic materials, ethylene for example.

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|---|--|--|
| <b>SECTION VI. HEALTH HAZARD INFORMATION</b>  |  | TLV 5 ppm ceiling level  |
| <p>HCl gas is corrosive to human tissue. Inhalation of gas concentrations moderately above the TLV can damage the teeth and irritate the nasal passages. Inhalation of higher concentrations (&gt;50 ppm) for a short time can cause choking &amp; coughing and produce severe irritation &amp; damage of the mucuous membranes of the upper respiratory tract. The NIOSH recommended IDLH level is 100 ppm. HCl can cause severe irritation and tissue burns. (Anhydrous hydrogen chloride is more damaging than hydrochloric acid mist, since it has an additional dehydrating effect on tissues.) If deeply inhaled, pulmonary edema may occur.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush immediately with running water for 15 min. including under eyelids. Contact physician!</p> <p><u>Skin Contact:</u> Flush affected area with running water. Remove contaminated clothing under safety shower. Get medical help if large body area contact or if irritation persists.</p> <p><u>Inhalation:</u> Remove to fresh air. Restore and/or support breathing as needed. Provide oxygen therapy for persistent coughing or if breathing is difficult. Keep victim warm and at rest. Get medical help. <i>/*Immediately dangerous to life and health.</i></p> |  |  |
| <b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>  |  |  |
| <p>Notify safety personnel or leaks. Evacuate area of excessive leakage; keep away or upwind until gas has been dispersed. Provide optimum ventilation. (Remove sources of ignition if H<sub>2</sub> generation a hazard.) Emergency personnel need full protective clothing and self-contained breathing apparatus.</p> <p>Stop leakage, if possible. Detect small leaks using Conc. NH<sub>4</sub>OH near suspected area (white fumes). If cylinder leak cannot be stopped, remove to hood or to a safe, open area to discharge.</p> <p>Use water spray or fog to control vapors and to flush area. Flush to retention area; avoid flushing directly to water course or sewer. Neutralize acid with soda ash or limestone. Neutral salt solution can usually be flushed to sewer with high dilution, but follow Federal, State and Local regulations. Return cylinder to supplier marked "defective".</p> <p>EPA (CWA) Reportable Quantity 5,000 lb (40 CFR 117)</p>  |  |  |
| <b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>   |  |  |
| <p>Provide exhaust ventilation (discharging to collection, neutralization system) to meet TLV requirements. Hood face velocity should exceed 100 fpm. Where feasible, totally enclosed systems should be used for HCl. Use approved acid respirator or self-contained breathing apparatus for emergency or non-routine conditions with full facepiece above 50 ppm.</p> <p>Wear suitable protective clothing for the working conditions to avoid HCl contact, such as rubber or plastic gloves, body suit, acid hood, etc. Use chemical safety goggles and face shield for eye protection. Woolen outside clothing (or other acid resistant fabric) has been recommended.</p> <p>Eyewash fountains and instant-acting safety showers must be readily accessible in areas of use and handling.</p> <p>Institute employee training and education program in safe practices for use and handling and in emergency procedures.</p>  |  |  |
| <b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>   |  |  |
| <p>Store in cylinders in a cool (&lt;125°F), dry, well-ventilated area away from strong oxidizing agents and alkaline materials. Protect containers from physical damage. Follow supplier's labels &amp; recommendations for handling cylinders of HCl. Prevent "suck-back" into cylinder (explosion hazard).</p> <p>Avoid inhaling gas and contact with eyes, skin or clothing. Use with adequate ventilation. Wash thoroughly after handling.</p> <p><b>DOT Classification:</b><br/>         (49 CFR 172.101) NONFLAMMABLE GAS I.D. No. UN1050 Label: NONFLAMMABLE GAS<br/>         (49 CFR 172.102) Optional (IMO Class 2.3) I.D. No. UN1050 Label: POISON GAS, CORROSIVE<br/> <b>DATA SOURCE(S) CODE:</b> 1-12, 14-17, 27, 31, 34, 37, 38, 47-49</p>  |  |  |
| <p><small>Agreement as to the accuracy of information herein for purposes of a purchase and necessary purchase is recommended. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corporation assumes no responsibility, makes no representation and assumes no responsibility as to the accuracy or quality of such information for application to the user's intended purposes or for representation of its use.</small></p>  |  | <p><b>APPROVALS:</b> MIS/CRO <i>J. M. Nish</i><br/> <b>INDUST. HYGIENE/SAFETY</b> <i>W. G. R.</i><br/> <b>MEDICAL REVIEW:</b> 15 June 1984</p> |

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# Material Safety Data Sheet

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No. 9  
SULFURIC ACID.  
CONCENTRATED  
Revision C  
Issued: October 1980  
Revised: February 1986

## SECTION 1. MATERIAL IDENTIFICATION

**MATERIAL NAME:** SULFURIC ACID, CONCENTRATED

**OTHER DESIGNATIONS:** Oil of Vitriol, Hydrogen Sulfate:  $H_2SO_4$ ; CAS #7664-93-9

**MANUFACTURER/SUPPLIER:** Available from many suppliers, including:

Allied Corporation, PO Box 2064R, Morristown, NJ 07960; Telephone: 800 631-8050

HMS

H:3

F: 0

R: 2

PPE: \*

\* See Sect. 8



R 1

I 3

S 4

K 0

## SECTION 2. INGREDIENTS AND HAZARDS

|   | %                 | HAZARD DATA  |
|---|-------------------|--|
| Hydrogen Sulfate ( $H_2SO_4$ )<br>Water   | 93-98<br>Balance* | 8-hr TWA: 1 mg/m <sup>3</sup><br><br>Human. Mist Inhalation.<br>TCLo: 3 mg/m <sup>3</sup> , 24 wk.<br>(Toxic Mouth Effects)<br><br>Rat. Oral.<br>LD <sub>50</sub> : 2140 mg/kg |
| * Material is obtained by the reaction of $SO_3$ and water. Can contain low impurity levels, such as 0.02% max of iron as Fe. Properties vary with $H_2SO_4$ content.<br><br>Current OSHA standard and ACGIH (1985-86) TLV. NIOSH has a 10-hr TWA, 40-hr. work week, of 1 mg/m <sup>3</sup> . |                   |  |

## SECTION 3. PHYSICAL DATA

|  | 93.19% $H_2SO_4$  | 98.33% $H_2SO_4$                      | 100% $H_2SO_4$   |
|--|---|---------------------------------------|--|
| Boiling Point, 1 atm, deg C            | ca 281  | ca 338                                | ca 330 (dc)  |
| Specific Gravity (60/60°F)             | 1.8354  | 1.84                                  | 1.84   |
| Volatiles, % @ 340°C                   | ca 100  | ca 100                                | ca 100   |
| Melting Point, deg C                   | ca -34  | ca 3                                  | 10.4   |
| Water Solubility ... Complete Miscible |   |                                       |  |
| Vapor Pressure, mm Hg @ 100°F ...      | <1 (93.19% $H_2SO_4$ );   | Deg. Baume ... 66 (93.19% $H_2SO_4$ ) | Density of $H_2SO_4$ is often reported in degrees Baume Be). Formula is Be=145 [145/sp gr for liquids heavier than water]. |
| Appearance and odor:                   | Clear, colorless, hygroscopic, oily liquid with no odor. Mists greater than 1 mg/m <sup>3</sup> are easily recognizable. Those at 5 mg/m <sup>3</sup> are distinctly objectionable. |                                       |  |

## SECTION 4. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air | LOWER | UPPER |
|------------------------|--------------------|----------------------------|-------|-------|
| None - Nonflammable    | NA                 | NA                         | NA    | NA    |

Sulfuric acid is nonflammable; however, it is a strong oxidizing agent and may cause ignition by contact with combustible materials. Small fires may be smothered with suitable dry chemical. Cool exterior of storage tanks of  $H_2SO_4$  with water to avoid rupture if exposed to fire. **Do not add water or other liquid to the acid!** The acid, especially when diluted with water, can react with metals to liberate flammable hydrogen gas.

Sulfuric acid mists and vapors from a fire area are corrosive (see sect. 5).

Fire fighters must wear self-contained breathing equipment and fully protective clothing.

## SECTION 5. REACTIVITY DATA

Sulfuric acid is stable under normal conditions of use and storage. It does not undergo hazardous polymerization. It is a strong mineral acid reacting with bases and metals. The concentrated acid is also a dehydrating agent, picking up moisture readily from the air or other materials. Hydrogen gas may be generated within a  $H_2SO_4$  container. Vent drums cautiously.

This material reacts exothermically with water. (Acid should always be added slowly to water. Water added to acid can cause boiling and uncontrolled splashing of the acid.) Sulfur oxides can result from decomposition and from oxidizing reactions of sulfuric acid.

**SECTION 6. HEALTH HAZARD INFORMATION | TLV**

Concentrated sulfuric acid is a strong mineral acid, an oxidizing agent, and a dehydrating agent that is rapidly damaging to all human tissue with which it comes in contact. Ingestion may cause severe injury or death. Eye contact produces severe or permanent injury. Inhalation of mists can damage both the upper respiratory tract and the lungs. Sulfuric acid is not listed as a carcinogen by the NTP, IARC, or OSHA.

**FIRST AID:** **EYE CONTACT:** Immediately flush eyes (including under eyelids) with plenty of running water for at least 15 minutes. Speed in diluting and rinsing out acid with water is extremely important if permanent eye damage is to be avoided.

Obtain medical help as soon as possible.\* **SKIN CONTACT:** Immediately flush affected areas with water, removing contaminated clothing while under the safety shower. Continue washing with water and get medical attention.\*

**INHALATION:** Remove to fresh air. Restore breathing. Call a physician immediately. **INGESTION:** Dilute acid immediately with large amounts of milk or water, then give milk of magnesia to neutralize. Never give anything by mouth to an unconscious person. Do not induce vomiting; if it occurs spontaneously, continue to administer fluid. Obtain medical attention as soon as possible.\*

Maintain observation of patient for possible delayed onset of pulmonary edema.

\* GET MEDICAL HELP = In plant, paramedic, community.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

Handle major spills by a predetermined plan. Contact supplier for assistance in this planning, in meeting local regulations, and for disposing of large amounts. Notify safety personnel. Provide optimum ventilation; vapors are extremely irritating. Stop leak if you can do so without risk.

Cleanup personnel need protection against inhalation or contact. Keep upwind. Contain spill. Minor leaks or spills can be diluted with much water and neutralized with soda ash or lime. If water is not available, cover contaminated area with sand, ashes, or gravel and neutralize cautiously with soda ash or lime.

**DISPOSAL:** Follow Federal, state, and local regulations. Runoff to sewer may create hydrogen gas, which is a fire or explosion hazard. EPA (CWA) RQ 1000 lbs. (40 CFR 117).

**SECTION 8. SPECIAL PROTECTION INFORMATION**

Provide general ventilation to meet current TLV requirements in the workplace. Where mists are up to 50 mg/m<sup>3</sup>, a high-efficiency particulate respirator with full facepiece is warranted; a type-C supplied-air respirator with full facepiece operated in pressure-demand mode is used to 100 mg/m<sup>3</sup>.

Avoid eye contact by use of chemical safety goggles or face shield where splashing may occur. Acid-resistant protective clothing, such as rubber gloves, aprons, boots, and suits, is recommended to avoid body contact.

Eyewash fountain and safety showers with deluge type of heads should be readily available where this material is handled or stored.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

Comprehensive preplacement and annual medical examinations with emphasis on dental erosion, cardiopulmonary system, and mucous membrane irritation and cough are indicated.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

Sulfuric acid in carboys or drums should be stored in clean, ventilated storage areas having acid-resistant floors with good drainage. Keep out of direct sunlight, do not store above 89.6°F (32°C). Storage facilities are to be separate from organic materials, metallic powders, chromates, chlorates, nitrates, carbides, oxidizables, etc. Soda ash, sand, or lime should be kept in general storage or work areas for emergency use. Protect containers against physical damage. Glass bottles need extra protection. Sulfuric acid is highly corrosive to most metals, especially below 77% H<sub>2</sub>SO<sub>4</sub>. Avoid breathing mist or vapors. Avoid contact with skin or eyes. Do not ingest. Do not add water to concentrated acid. Drums may contain hydrogen gas, so open cautiously. Use nonsparking tools free of oil, dirt, and grit and vapor-proof electrical fixtures.

DOT Classification: Corrosive Material.

ID No.: UN1830

Label: Corrosive

Data Source(s) Code: 1-12, 19, 20, 24, 26, 31, 37-39, 42, 82. CK

Judgements as to chemical safety of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Carson Publishing Corp. assumes no responsibility, and hereby disclaims any responsibility as to the accuracy or reliability of such information for application to purchaser's intended purposes or for consequences of its use.

Approvals *J. J. Carson, 6/86.*

Indust. Hygiene/Safety *J. J. Carson*

Medical Review *J. J. Carson*

# MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION

1145 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854



MSDS # 5-4

ISOPROPYL ALCOHOL  
Revision 0

Issued: October 1982

Revised: September 1985

From Genium's MSDS Collection, to be used as a reference.

## SECTION 1. MATERIAL IDENTIFICATION

18

**MATERIAL NAME:** ISOPROPYL ALCOHOL

**OTHER DESIGNATIONS:** Isopropanol, 2-Propanol, sec-Propyl Alcohol, Dimethyl Carbinol, Isohol, Petrohol, IPA.

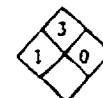
$C_3H_8O$ , CAS # 0067 63 0

**MANUFACTURER/SUPPLIER:** Available from several sources, including:

Allied Corporation

PO Box 2064R

Morristown, NJ 07960 (201) 455-4400 - (800) 631-8050



## SECTION 2. INGREDIENTS AND HAZARDS

%

HAZARD DATA

ISOPROPYL ALCOHOL

ca 100

\* Current OSHA PEL and ACGIH TLV (1985-86).

The ACGIH STEL is 500 ppm, 1225 mg/m<sup>3</sup>.

NIOSH has recommended a 15-minute ceiling of 800 ppm.

NOTE: NTP and IARC list CAS #0067-63-0, "isopropyl alcohol manufacture (strong acid process)" as a human carcinogen. We believe this refers to the process and not necessarily the product. Check with your suppliers.

8-hr TWA: 400 ppm or  
980 mg/m<sup>3</sup>  
-----  
Human, Eye: 20 ppm  
-----  
Primary irritation dose  
Human, Inhalation:  
400 ppm: IRR  
-----  
Man, Oral LDLo:  
8600 mg/kg  
-----  
Rat, Oral:  
5840 mg/kg

## SECTION 3. PHYSICAL DATA

Boiling point, 1 atm ..... 180°F, (82°C)

Specific gravity (H<sub>2</sub>O=1) ..... 0.786

Vapor pressure @ 20°C, mmHg ... 33

Melting point ..... -127.3°F (-88.5°C)

Vapor density (Air=1) ..... 2.07

% Volatile by volume, 20°C ... ca 100

Viscosity, 20°C, cps ..... 2.4

Evaporation rate (CCl<sub>4</sub>=1) .... 2.6

Solubility in water ..... Completely  
soluble

Molecular weight ..... 60.11

APPEARANCE & ODOR: Clear, colorless liquid with a slight non-residual alcohol type odor.

Threshold odor concentration, 100% recognition by test panel, is 28.2 ppm.

## SECTION 4. FIRE AND EXPLOSION DATA

Lower

Upper

Flash Point and Method

Autoignition Temp.

Flammability Limits in Air

53°F (11.7°C) closed cup

750°F (399°C)

% by volume

2.0

12.0

**EXTINGUISHING MEDIA:** Carbon dioxide, dry chemical, alcohol foam. Use water spray to cool fire-exposed tanks and containers. A fine water mist may be used to smother fire or to disperse vapors. Do not use a solid stream of water since the stream will scatter and spread the fire.

Isopropyl alcohol is an OSHA Class 1B flammable liquid. It is a dangerous fire hazard and a moderate explosion hazard when exposed to heat, flames or oxidizers. At 20°C, the vapor space (saturated) above isopropyl alcohol contains about 4.3 volume % of vapor. Vapors are heavier than air and may travel a considerable distance to an ignition source and flashback. Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting fires involving this material.

## SECTION 5. REACTIVITY DATA

This material is stable in closed containers at room temperature under normal storage and handling conditions. It does not polymerize. Isopropyl alcohol is incompatible with acetaldehyde, chlorine, ethylene oxide, hydrogen-palladium combination, hydrogen peroxide-sulfuric acid combination, potassium tert-butoxide, hypochlorous acid, isocyanates, nitroform, phosgene, oleum, perchloric acid, and strong oxidizing agents. Do not store isopropyl alcohol in aluminum containers.

Thermal-oxidative degradation products can include carbon monoxide.

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MK087391

MKIL20256

Revised 9/85

MSDS # 324, Issued 10/82 ISOPROPYL ALCOHOL (Rev. 0)

## SECTION 6. HEALTH HAZARD INFORMATION

TLV 400 ppm (see Section 2)

At 400 ppm, vapors of isopropanol (IPA) may cause mild irritation of the eyes, nose, and throat. Prolonged exposures above the TLV may cause nausea, headache, and mild narcosis. The liquid is irritating to the eyes and produces intense stinging and burning. If not promptly removed, IPA may cause eye damage. Repeated or prolonged contact with the skin may cause irritation and dermatitis. While toxic skin absorption is unlikely it should be considered in meeting the TLV. Ingestion of IPA will cause burning of the gastrointestinal tract, nausea, vomiting, bleeding, CNS depression, hemolysis, and pulmonary damage. Ingestion of as little as 10 ml may cause serious injury, while ingestion of 100 ml can be fatal. The single lethal dose for an adult is approximately 250 ml. The TLV for this material is set on the basis of eye, nose, and throat irritation. IPA has good warning properties.

**FIRST AID:** **EYE CONTACT:** Flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention (Inplant, community, paramedic). **SKIN CONTACT:** Flush exposed area with water while removing contaminated clothing. Get medical attention if irritation persists. **INHALATION:** Remove victim to fresh air. Restore and/or support breathing as required. Get medical help. **INGESTION:** Give victim milk or water. Induce vomiting by sticking finger to back of throat. Contact a physician or Poison Control Center. Never give anything by mouth to a person who is unconscious or is having convulsions.

## SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Notify safety personnel of large spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Evacuate all personnel from area, except for those involved in clean-up. Remove leaking container to safe place if feasible. Clean-up personnel need protection against liquid contact and vapor inhalation. Absorb small spills with paper towels, evaporate flammable alcohol in exhaust hood and burn dry paper. Contain large spills and collect liquid, if feasible, or absorb with vermiculite or sand. Place waste or absorbent into closed container (using non-sparking tools) for disposal. Water spray can be used to dilute and flush spill if necessary, but do not flush to water course or to sewer or enclosed area.

**DISPOSAL:** Burn waste liquid in an approved incinerator or dispose of via licensed waste disposal company.

Absorbed liquid can be landfilled. Follow Federal, State and Local regulations.

**AQUATIC TOXICITY TLV 96:** 1000-100 ppm.

## SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation (explosion proof) to meet TLV requirements. For emergency or nonroutine exposures where the TLV may be exceeded, use an appropriate NIOSH approved respirator. Fume hoods should have a minimum face velocity of 100 fpm. All electrical service in use or storage areas should have an explosion-proof design. Wear impervious gloves and safety glasses to prevent contact with the skin and eyes. If repeated or prolonged contact with liquid or mist is likely, wear protective clothing including boots, apron, and face-shield or splash goggles. Remove contaminated clothing immediately and do not reuse until it has been properly laundered.

Eye wash stations and safety showers should be available in use and handling areas.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

## SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, dry, well-ventilated area away from oxidizers, heat, sparks, and open flame. Protect containers from physical damage.

Use only with adequate ventilation. Avoid inhalation of vapor and repeated or prolonged contact with the skin. Remove contaminated clothing immediately. Wash thoroughly after handling.

Ground and bond containers and equipment when transferring or pouring liquid. Use non-sparking tools.

Do not eat or smoke in areas where this material is being used or handled.

**DOT CLASSIFICATION:** Flammable liquid.

**DOT I.D. NO.:** UN1219

**DATA SOURCE(S) CODE (See Glossary):** 1-12, 19, 20, 23, 26, 31, 34, 37, 39, 43, 47, 59, 79.R.

Information on the toxicity of chemicals is derived from numerous sources and is constantly changing. Therefore, although this information is based on the best available data at the time of publication, it is not intended to be a substitute for the information in the Material Safety Data Sheet (MSDS) or the Safety Data Sheet (SDS) or the Material Safety Data Sheet (MSDS) or the Safety Data Sheet (SDS) or the Material Safety Data Sheet (MSDS) or the Safety Data Sheet (SDS).

**APPROVALS**

*80. Accross, 11/85*

**INDUST. HYGIENE/SAFETY**

*11-85*

**MEDICAL REVIEW:**

*11-85*

IOA 5/831M

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MKIL20257

# MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COM: 8\*235-4085

MATERIALS  
INFORMATION  
SERVICES

NO. 359

1,2-DICHLOROETHANE

REVISION B

Date November 1978

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: 1,2-DICHLOROETHANE

OTHER DESIGNATIONS: Ethylene dichloride,  $\text{ClC}_2\text{H}_4\text{Cl}$ , sym-Dichloroethane, Ethylene Chloride, GE Material D5B54, CAS# 000 107 062

MANUFACTURER: Available from several suppliers, including  
Dow Chemical Company  
1000 Main St.  
Midland, MI 48640

## SECTION II. INGREDIENTS AND HAZARDS

1,2-Dichloroethane

ca 100

### HAZARD DATA

8-hr TWA 10 ppm\*

Human, Inhalation  
TCLo 4000 ppm/1 hr  
central nervous system

Rat, oral LD<sub>50</sub>  
680 mg/kg

\*ACGIH 1978 intended changes list TLV. Current OSHA TLV is 50 ppm.

NIOSH (1976) proposed a 10-hr TWA of 5 ppm with a ceiling of 15 ppm (15 minute sample) and has now recommended that the material be handled in the workplace as if it were a carcinogen in man. (NIOSH Current Intelligence Bulletin No. 25 and 27, 1978)

## SECTION III. PHYSICAL DATA

|                                   |            |  |       |
|-----------------------------------|------------|--|-------|
| Boiling point at 1 atm, deg F (C) | 182 (83.5) | Specific gravity (20/4C)               | 1.257 |
| Vapor density (Air=1)             | 3.4        | Evaporation rate (CCl <sub>4</sub> =1) | 1.3   |
| Vapor pressure at 25 C, mm Hg     | 87         | Molecular weight                       | 98.96 |
| Solubility in water               | Slight     | Freezing point, deg C                  | -35.7 |

Appearance & Odor: A colorless, oily liquid; chloroform-like odor whose recognition threshold (100% of test panel) is 40 ppm. Odor detection probably indicates an excessive exposure to vapors.

## SECTION IV. FIRE AND EXPLOSION DATA

| Flash Point and Method | Autoignition Temp. | Flammability Limits in Air | LOWER | UPPER |
|------------------------|--------------------|----------------------------|-------|-------|
| 56°F                   | 775°F              | % by Volume                | 6.2   | 15.9  |

Extinguishing Media: CO<sub>2</sub>, dry chemical, alcohol foam or water fog. Blanketing effect needed to smother fire. Water may be ineffective but can be used to cool fire-exposed containers.

It is a dangerous fire hazard and a moderate explosion hazard when exposed to heat or flame. Vapors can flow along surfaces to distant ignition sources and flash back. Firefighters should use self-contained breathing apparatus when this material is involved in a fire situation.

## SECTION V. REACTIVITY DATA

This solvent is stable at ordinary working conditions. Explosion hazards can exist at elevated temperatures. No hazardous polymerization will occur. It may react vigorously with oxidizing materials. Thermal degradation products include highly toxic fumes of phosgene, oxides of carbon and nitrogen.

Explosions have occurred with mixtures of ethylene dichloride with liquid ammonia or with dimethylaminopropylamine. Finely divided aluminum or magnesium metal may be hazardous in contact with liquid.

GENERAL ELECTRIC

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MK00034651

MKIL21004

# Attachment “N”

**M-Kesson**

Chemical Operations  
and Safety Manual

MKIL40153

MK094563

MKIL189152

**McKesson**

**Operations**

CHECK SHEET

| Rev.<br># | Issue Date                                   | Initials | Rev.<br># | Issue Date               | Initials |
|-----------|--|----------|-----------|--------------------------|----------|
| 1         | <input checked="" type="checkbox"/> 3/19/86  | MI       | 11        | <input type="checkbox"/> |          |
| 2         | <input checked="" type="checkbox"/> 4/23/86  | DLW      | 12        | <input type="checkbox"/> |          |
| 3         | <input checked="" type="checkbox"/> 7-17-86  | SMC      | 13        | <input type="checkbox"/> |          |
| 4         | <input checked="" type="checkbox"/> 8-29-86  | SMC      | 14        | <input type="checkbox"/> |          |
| 5         | <input checked="" type="checkbox"/> 9-22-86  | SMC      | 15        | <input type="checkbox"/> |          |
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| 8         | <input type="checkbox"/>                     |          | 18        | <input type="checkbox"/> |          |
| 9         | <input type="checkbox"/>                     |          | 19        | <input type="checkbox"/> |          |
| 10        | <input type="checkbox"/>                     |          | 20        | <input type="checkbox"/> |          |

After revisions are filed, check box ☒, enter issue date and your initials. The cover letter (attached to each revision) should be filed behind this Check Sheet.

MKIL40154

MK094564

*Dinah DeWitt*

To  
Holders of the Chemical  
Operations & Safety Manual

Date  
11 November 1985

**McKesson**

Intra Company  
Correspondence

From

Location/Tel.

Dick A. Davis

Home Office Chemical

Subject

Copies To

CHEMICAL OPERATIONS  
& SAFETY MANUAL

Home Office Vice Presidents  
Regional Vice Presidents

Enclosed is a new McKesson Chemical Company Operations and Safety Manual. The manual has been completely revised and is the first complete revision since 1978. We hope you will find it useful. Please discard the old blue Chemical Group Operations Manual and replace it with this one.

Numerous sections and exhibits have been extensively modified, added, or deleted. A few of the more important revisions are as follows:

- 10.10 Added a Hazardous Waste Policy
- 10.90 Substantially revised the Service Center Safety and Compliance Review form
- 20.35 Deleted Code Labeling except under specified circumstances
- 30. Added various Transportation sections
- 40.75 Deleted DOE Building Energy Restrictions
- 90. Substantially revised Compressed Gas Repackaging Procedures
- 100. Expanded Government Regulations section

In an undertaking of this magnitude it is possible that we may have allowed either errors or omissions to be published in this manual. Please advise Marianne Domin, Operations Secretary at Home Office, of any such errors or omissions you may find. Revisions will be issued as necessary.

*Dick A. Davis*

Dick A. Davis

DAD:md  
Enclosure

P.S. My personal thanks to all of the operations personnel involved in creating this completely updated manual.

**MKIL40154.01**

MK094565

**MKIL189154**

# McKesson Operations

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|                            | 10/15/86   | 10/15/86       |     |

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# McKesson Operations

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SECRET

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**McKesson**  
**Operations**

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| Subject                           | Issue Date | Effective Date |     |
| ACCIDENT & LOSS PREVENTION POLICY | 9/15/85    | 9/15/85        |     |

**GENERAL  
SAFETY  
POLICY**

McKesson is committed to conducting our operations with the highest regard for safe and healthful working conditions for employees and for the protection of our customers and the general public. In these practices we will make every effort to comply with the letter and the spirit of existing governmental legislation and established regulations.

Accident prevention and efficient operations go hand in hand. Accidents drain both human and mechanical resources. All levels of management have a primary responsibility for the safety and well-being of all employees. Each employee has the responsibility to work safely. This responsibility can be met only by continually working to promote safe work practices among all employees and to maintain property and equipment in safe operating condition. That policy forms the foundation for the McKesson Chemical Group Safety Program.

**OBJECTIVES**

1. Avoid personal injury and protect the Company's number one asset...its people.
2. Comply with all Federal, State and Municipal safety laws and ordinances.
3. Protect the Company's physical assets.

**IMPLEMEN-  
TATION**

Total safety is accomplished by a sincere and constant cooperative spirit among all employees. The policy is implemented through these vital areas.

1. Development and application of safety standards both for production facilities (equipment, tools, work methods, and guarding), and for products, based on applicable legal and voluntary codes, rules, and recognized industry standards as a minimum.
2. An active Safety Committee meeting at periodic intervals.
3. Safety Meetings conducted monthly.

**MKIL40158**

MK294569

**MKIL189158**

**McKesson**  
**Operations**

| Section                           | Reference  | Page           | End |
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| GENERAL SAFETY                    | 10.05      | 2              |     |
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| ACCIDENT & LOSS PREVENTION POLICY | 9/15/85    | 9/15/85        |     |

IMPLEMEN-  
TATION  
(Cont.)

4. Education and training in general safety principles and specific techniques appropriate to employees' normal duties.
5. Protective equipment to provide injury protection.
6. Audits of operating locations carried out by properly trained personnel to assure a safe and healthful physical environment.
7. Accident investigations to identify the causes of accidents and apply corrective action to eliminate or reduce accident-causing problems.
8. Industrial hygiene studies to identify potential health hazards and develop necessary control measures.
9. Accident records and accident-cause analysis to determine accident trends and provide targets for corrective action.
10. Safety publicity and promotion to increase program interest and participation.
11. Off-the-job accident prevention in cooperation with public and private agencies to promote the application of accident prevention to non-work activities.
12. Emergency Evacuation Drill conducted semi-annually.

RESPONSI-  
BILITY

Line management is responsible for the successful implementation of our Safety Program, with assistance and support from staff personnel expected. Each operating region, beginning with the Regional Vice President, bears the responsibility for good safety performance. Area and Service Center Managers, as well as all supervisory personnel, share in this responsibility.

**MKIL40159**

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**McKesson**  
**Operations**

| Section                           | Reference  | Page           | End |
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| ACCIDENT & LOSS PREVENTION POLICY | 9/15/85    | 9/15/85        |     |

RESPONSI-  
BILITY  
(Cont.)

The Company Loss and Safety Coordinator, responsible for administering this Safety Program, is the Vice President, Operations, who reports to the Vice President and General Manager.

The Regional Loss and Safety Coordinator, responsible for administering and monitoring safety programs as prescribed by the Company, is the Regional Operations and Safety Manager who reports to the Regional Vice President.

Service Center Management and Supervisors are responsible for developing the proper attitudes toward safety and health in themselves and in those they supervise and for ensuring that all operations are performed with the utmost regard for the safety and health of all personnel involved.

Employees are responsible for wholehearted, genuine cooperation with all aspects of the Safety Program, including: compliance with all applicable rules and regulations, and continuously practicing safety while performing their duties.

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MKIL189160

**McKesson**  
**Operations**

| Section                          | Reference  | Page           | End |
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| Subject                          | Issue Date | Effective Date |     |
| McKESSON CHEMICAL SAFETY PROGRAM | 9/15/85    | 9/15/85        |     |

GENERAL

The following functions and procedures are basic elements of a facilities safety program commensurate with the criteria outlined in the McKesson Chemical Company Accident & Loss Prevention Policy, Ref. 10.05.

SAFETY  
COMMITTEE

Each chemical facility shall organize a Safety Committee. The Committee is to meet at periodic intervals and maintain recorded minutes which will be available for inspection and review by internal safety audits, OSHA, or insurance inspectors.

Purpose of Safety Committee

The purpose is to respond to the objectives set forth in the McKesson Chemical Safety Policy:

1. To serve in planning the unit's Safety Program; to take a leading role in making the program operate successfully; to influence others to work safely.
2. To assist and advise the facility manager in taking effective remedial measures that will control or eliminate accidents.
3. To ensure accident-free operation through constant monitoring of conditions, preventive maintenance, and the establishment of safe standard operating procedures.
4. To ensure that the safety and health policy is communicated to every employee, and that that policy is effectively implemented.
5. To ensure compliance with Federal, State and Local Safety Regulations.

Organization of Safety Committee

The Safety Committee should include all members of local management and supervision, as well as representatives from the warehouse, sales force, repack, driver, and office personnel. Membership will vary depending on the number of employees at a given location.

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| Section                         | Reference  | Page           | End |
|---------------------------------|------------|----------------|-----|
| GENERAL SAFETY                  | 10.06      | 1              |     |
| Subject                         | Issue Date | Effective Date |     |
| McKESON CHEMICAL SAFETY PROGRAM | 9/15/85    | 9/15/85        |     |

GENERAL

The following functions and procedures are basic elements of a facilities safety program commensurate with the criteria outlined in the McKesson Chemical Company Accident & Loss Prevention Policy, Ref. 10.05.

SAFETY  
COMMITTEE

Each chemical facility shall organize a Safety Committee. The Committee is to meet at periodic intervals and maintain recorded minutes which will be available for inspection and review by internal safety audits, OSHA, or insurance inspectors.

Purpose of Safety Committee

The purpose is to respond to the objectives set forth in the McKesson Chemical Safety Policy:

1. To serve in planning the unit's Safety Program; to take a leading role in making the program operate successfully; to influence others to work safely.
2. To assist and advise the facility manager in taking effective remedial measures that will control or eliminate accidents.
3. To ensure accident-free operation through constant monitoring of conditions, preventive maintenance, and the establishment of safe standard operating procedures.
4. To ensure that the safety and health policy is communicated to every employee, and that that policy is effectively implemented.
5. To ensure compliance with Federal, State and Local Safety Regulations.

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| McKESSON CHEMICAL SAFETY PROGRAM | 9/15/85    | 9/15/85        |     |

SAFETY  
COMMITTEE  
(Cont.)

Frequency of Safety Committee Meetings

Meetings are to be held on a periodic basis, and at least once a month. Duration of meetings may vary from 15 minutes to a couple of hours depending on need. Most meetings should be short and adhere strictly to safety discussion.

Functions of Safety Committee

The duties of the Safety Committee are to coordinate all facets of safety and health.

1. Establish procedures for handling suggestions and recommendations of the committee. Prepare minutes of safety meetings. (See suggested report form, Exhibit 1, at the end of this section.)
2. Review and analyze data on current accidents (including all vehicle accidents) and devise methods, procedures, and changes to prevent their recurrence. This includes non-serious accidents or near accidents.
3. Establish provisions for regular periodic and meaningful inspections; review results and recommend indicated changes. Identify hazards.
4. Promote and monitor the establishment of a regular program of job hazard analysis and the setting up of safe standard operating procedures.
5. Study and recommend adoption of or changes to procedures pertaining to the use of protective equipment or devices for the elimination or control of hazards.
6. Establish a system of follow-ups and deadlines on all recommendations of the committee to see that compliance is achieved.
7. Communicate new safety ideas to Regional Loss Coordinators so that all units may benefit.

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**SAFETY  
MEETINGS**

The purpose of safety meetings is to stress the importance of safety in daily operations and to implement recommendations presented by the Safety Committee or Operations Staff to all facility personnel. Meetings should be limited to safety considerations only.

1. Safety Meetings are conducted by the Service Center Operations Manager.
2. Meetings are held on a monthly basis with an average duration of 30 minutes.
3. Meetings should be scheduled to allow all Facility Operations personnel to attend.
4. Meetings can be used for training purposes, as well as safety discussions.
5. Minutes of Safety Meetings must be specific so that they can be used as training documentation. The minutes should include but not be limited to:
  - a. Purpose of meeting (topics to be addressed).
  - b. Names of employees attending meeting.
  - c. Length of meeting.
  - d. Date.
  - e. Type of training conducted (attach copies of all literature handouts).
  - f. Copies of Minutes should be forwarded to the Area and Regional Operational Managers.
6. Service Center Management may request Regional Operations personnel attend.
7. Area Managers should attend at least one Safety Meeting per year, per facility.
8. Outside personnel (i.e., Fire Dept., State or Local Police, Safety Equipment Suppliers, etc.) or films/slides presentations obtained from Home Office, Regional Office or other agencies should be used periodically to vary the meetings.

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**McKesson**  
**Operations**

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ACCIDENT  
AND UNUSUAL  
INCIDENT  
INVESTI-  
GATION

An Accident is an unplanned event caused by unsafe acts and/or unsafe conditions.

An Unusual Incident is an unplanned event which did not result in an accident, environmental damage, or property damage but which had the potential to do so.

As soon as practical following an accident or unusual incident, an investigation and report are to be made. These will usually be done by the immediate supervisor. (Refs. 10.30 and 10.31)

Purpose of Investigation

Accident investigation is a device for preventing accidents. Investigations must be for fact finding, not fault finding. This is not to say that responsibility may not be fixed where personal failure has caused injury, or that such persons should be excused from the consequences. The principal purposes of an accident investigation are:

1. To identify the causes (unsafe act/unsafe condition) of accidents and apply corrective action to eliminate or reduce accident-causing problems to prevent a recurrence.
2. To communicate the particular hazard among employees and to direct attention to accident prevention in general.
3. To determine facts bearing on legal liability.

TRAINING  
EMPLOYEES

Issuing orders is not always possible or desirable. In addition to providing direction, supervisors should work to influence the voluntary acts of workers through education and motivation. Much of McKesson's Chemical Safety Program effort is directed toward educating and influencing people.

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**Operations**

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| McKESSON CHEMICAL SAFETY PROGRAM | 9/15/85    | 9/15/85        |     |

**TRAINING  
EMPLOYEES  
(Cont.)**

**The Supervisor**

By including safety as a part of daily activities, the supervisor can increase safety awareness in his department. Instead of thinking that safety is separate from the normal duties, the supervisor should consider safety as a part of normal duties. The following are a supervisor's principal duties:

Maintain order, safely.  
Keep work schedule, safely.  
Maintain equipment, safely.  
Establish work methods and procedures, safely.  
Instruct workers, safely.  
Keep employees busy, safely.  
Supervise work, safely.  
Adjust complaints, safely.  
Maintain morale, safely.  
Control costs, safely.  
Assign jobs, safely.

When we include safety as a part of our duties, employees recognize our commitment to safety.

**Training Aids**

1. Standard posters, literature, safety films, and some training programs should be obtained as needed through the Regional Loss Coordinator from such services as the:
  - a. National Safety Council (Indicate McKesson Corporation when ordering and use Account No. 104830-0006.)
  - b. Trucking Associations
  - c. Chemical Suppliers
  - d. Equipment Vendors

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**Operations**

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TRAINING  
EMPLOYEES  
(Cont.)

2. Special posters, film strips, Material Safety Data Sheets, Chemical Safety Data Sheets, etc., may be obtained from:
  - a. Corporate Loss Control
  - b. Home Office Operations
  - c. Chemical Suppliers
  - d. Manufacturing Chemists Association
  - e. Chlorine Institute
  - f. Compressed Gas Association

Procedures

Written procedures should be on hand for all functions requiring specialized training. Although there shall be on-going efforts to standardize and update procedures from Region and Home Office Operations, it does not preclude the facility from writing procedures to have on hand in the interim where specialized or hazardous operating functions are needed.

OFF-THE-JOB  
SAFETY

Off-the-job safety is an important part of the Safety Program. Constant effort should be made to encourage the employee and his family to practice safety away from the work place. An accident at home or on the highway involving the employee or his family provides some of the same stress or lost time as an accident at work. This type of program should be emphasized through films, posters, magazines, bulletins, etc., and as part of periodic safety meetings.

MAKE McKESSON CHEMICAL COMPANY A SAFE PLACE TO WORK.

MKIL40166

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Chem Op 10.06  
Exhibit 1  
Issued 9/15/85  
Page 1 of 1

McKESSON CHEMICAL COMPANY  
REPORT OF SAFETY COMMITTEE MEETING

Location \_\_\_\_\_ Date \_\_\_\_\_

No. Employees on Committee \_\_\_\_\_ No. Attended this Meeting \_\_\_\_\_

Minutes of the Meeting \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Recommendations - Pending \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

New \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Meeting Directed By \_\_\_\_\_ Position \_\_\_\_\_

Report Reviewed Signed by (Local Manager) \_\_\_\_\_

Next Meeting - Date \_\_\_\_\_ Time \_\_\_\_\_ Place \_\_\_\_\_

Use Back of Sheet if Necessary

Distribution

- 1) Regional Operations Mgr.
- 2) Area Operations Mgr.
- 3) Safety File

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**McKesson**  
**Operations**

| Section                           | Reference  | Page           | End |
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| GENERAL SAFETY                    | 10.07      | 1              |     |
| Subject                           | Issue Date | Effective Date |     |
| CORPORATE LOSS PREVENTION PROGRAM | 9/15/85    | 9/15/85        |     |

INTRO-  
DUCTION

As a result of our attempts to control and prevent losses in McKesson Corporation, certain philosophies have evolved, providing a foundation for the development of a comprehensive loss prevention effort. These philosophies are briefly described below.

1. Most accidents can be prevented. Analyzing the causes of accidents over time reveals that there are in fact very few non-preventable incidents that result in personal injury and damage to property.
2. Generally, accidents are caused by actions of people. While innovative methods of insuring risks and managing claims can reduce the cost of accidents, the least costly accidents are those that don't occur. Safety and accident prevention must be ingrained in the heart of everyone's job.
3. The ultimate responsibility for loss prevention belongs to line operations management. Line managers who directly supervise physical operations have the most impact on, and the primary responsibility for, accident prevention. Outside resources, with technical expertise, professional analysis, program design, and provision of accurate performance data, can serve as a focal point and catalyst for improved loss prevention.
4. There is significant opportunity and reason to improve our loss prevention record. Our total accident experience remains above the frequencies common to similar industries. The costs of these accidents have risen and will continue to rise sharply due to the rising costs of insurance, compensation, medical treatment, and court settlements. A large organization such as ours will bear the economic consequences of our experience over the long run.

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**McKesson**  
**Operations**

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| CORPORATE LOSS PREVENTION PROGRAM | 9/15/85    | 9/15/85        |     |

INTRO-  
DUCTION  
(Cont.)

5. Accurate, timely data on the incidence of accidents is an absolute prerequisite to effective loss prevention.

With these philosophies in mind, and giving full consideration to the appropriate role of a corporation wide cost-improvement effort, a Corporate Loss Prevention Program has been developed, as outlined hereafter.

PROGRAM

- I. Reinforce line management's responsibility and accountability for accident reduction and cost control.
  - A. Each month, the profit center supervising the physical operations at each location is charged up to \$5,000 per occurrence for the incurred cost of casualty claims, and up to \$10,000 for claims involving property losses of the unit.
  - B. The balance of total costs to the Corporation will be developed annually and allocated monthly to the Operating Group, on the basis of 36-month cost experience.
  - C. Management should establish accident improvement goals as part of performance objectives. Actual performance, as compared to the objectives, should be included in assessments of individual contributions and discussed in performance reviews.
- II. Quarterly accident summaries will be provided to the Chief Operating Officer as well as to each Operating Group President. Comprehensive reports, containing a breakdown of each operating location of the Company, will be collected and compiled by each Group's safety administrator. This data will assist in evaluating the progress of accident prevention efforts at each Service Center.

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**McKesson**  
**Operations**

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| GENERAL SAFETY                    | 10.07      | 3              | X   |
| Subject                           | Issue Date | Effective Date |     |
| CORPORATE LOSS PREVENTION PROGRAM | 9/15/85    | 9/15/85        |     |

PROGRAM  
(Cont.)

III. Staff resources will be provided by the Corporate Risk Management Department and/or by appropriate Operating Groups to facilitate loss reduction efforts, as described below.

- A. Safety engineering evaluations of locations will be available upon request, or as considered necessary by Risk Management.
- B. Resource materials (films, posters, etc.) will be available upon request, to supplement on-going individual Group programs.
- C. Specific safety programs (environmental monitoring, lift truck operator training, driver training, etc.) will be analyzed, and solutions coordinated with operating management.
- D. Accident Investigations will be performed, for all fatalities or serious losses, by an ad hoc committee selected by the applicable Operating Group President. The committee will submit findings and corrective alternatives to the Chief Executive Officer and Operating Group President, and will conduct a six-month follow-up review of action taken.
- E. Regulatory compliance - Corporate resources will be available to assist each Group in complying with OSHA regulations, national & local fire codes, boiler/pressure vessel regulations and other regulatory agencies' regulations.
- F. Target Safety Programs will be presented by Corporate Risk Management to address specific areas of operations where improvement is most warranted. These Corporate programs will be presented with the intention of supporting the loss prevention activities developed by each Operating Group. Locally designed and administered programs are encouraged, since they are the foundation and backbone of loss prevention.

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**Operations**

| Section                     | Reference  | Page           | End |
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| GENERAL SAFETY              | 10.08      | 1              | X   |
| Subject                     | Issue Date | Effective Date |     |
| CONTRACTOR'S WORK AGREEMENT | 9/15/85    | 9/15/85        |     |

**GENERAL** Sound business practice dictates that McKesson Chemical obtain a hold harmless agreement and certificates of insurance whenever an outside contractor is hired to perform construction or repair work or services.

**CERTIFICATE OF INSURANCE** A certificate of insurance is formal evidence of insurance coverage. It is not a commitment or contract of obligation, nor does it substitute for same.

**HOLD HARMLESS AGREEMENT** A hold harmless agreement is a formal contract whereby one party assumes certain legal liability on behalf of another party.

In the case of outside contractors, a work agreement (Exhibit 1) is to be obtained. As shown on the form, this agreement is supported by certificates of insurance evidencing coverage for workers' compensation and general and automobile liability.

**REQUIREMENTS** The Area Operations Manager is responsible for obtaining and maintaining such documents or advising of exceptions. No exceptions to the above requirements and no modifications to the work agreement can be made without approval of the Vice President Operations, in consultation with the Law Department.

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McKESSON CORPORATION WORK AGREEMENT

THIS AGREEMENT is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 198\_\_, between \_\_\_\_\_, hereinafter referred to by the pronoun "you", and McKESSON CHEMICAL COMPANY, a division of McKesson Corporation, a Maryland corporation, hereinafter called "McKesson".

During the term hereof, this Agreement shall cover all work and/or services ordered by McKesson and accepted by you, pertaining to McKesson's operations.

1. ITEMS SUPPLIED.

You will furnish (a) personnel with training, experience and physical ability together with the necessary and adequate supervision in order to perform the service undertaken in a workmanlike manner without endangering the lives or property located at the work site, and (b) in good, safe and serviceable condition, all tools, equipment and supplies customarily required by your employees for the performance of the service.

2. CONTRACT PRICE: BILLING.

McKesson shall pay you for said work at the price agreed upon by McKesson and you, when such work has been completed to the satisfaction of McKesson. McKesson may withhold payment to protect itself from loss by reason of any failure by you to pay for the items furnished by you.

3. LAWS, REGULATIONS AND COMPANY RULES.

You agree to obtain all permits and licenses required for your performance of said work and to comply with all federal, state and local laws (including labor laws), ordinances, rules, executive orders, regulations and orders of governmental agencies applicable to said work. You further agree to comply with all safety and/or security regulations of which you may be notified from time to time by McKesson or which are posted by McKesson at work sites.

This includes, but is not limited to, (i) reviewing McKesson form HC-2 which identifies hazardous chemicals to which you or your personnel may be exposed while performing your work and the location of Material Safety Data Sheets ("MSDS") for these hazardous chemicals, and (ii) advising your personnel of the existence of said hazardous chemicals and the location of said MSDS.

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4. USE OF PREMISES. 9/15/85 9/15/85  
Page 2 of 4

You shall perform all work in such manner as to cause a minimum of interference with McKesson's operations and the operations of other contractors on the premises; to protect all persons and property thereon from damage or injury; and shall assume responsibility for the taking of such precautions by you and your subcontractors' employees, agents, licensees, permittees and subcontractors. This includes, but is not limited to, written notification to McKesson of hazardous chemicals you may bring on site. Upon completion of the work, you shall leave the premises clean and free of all tools, equipment, waste materials and rubbish.

5. INDEMNITY - PROPERTY DAMAGE, BODILY INJURY AND WRONGFUL DEATH.

You agree to defend, indemnify and hold McKesson harmless against all losses, claims, damages and suits arising out of or incidental to the work to be performed under this Agreement, whether or not groundless, false or fraudulent, including all counsel fees and other expenses of litigation, on account of (i) any damage or loss to the property of McKesson, its licensees, permittees, contractors or subcontractors, or (ii) bodily injury or death that may occur wholly or partially as a result of your willful misconduct, negligent acts or omissions or those of your agents, employees or subcontractors.

6. INSURANCE.

You and your subcontractors shall, at all times while operations are conducted hereunder, maintain the following minimum insurance coverages:

- A. Workers' Compensation, providing statutory benefits, and Employer's Liability Insurance, covering your employees engaged in work performed hereunder, in compliance with the state having jurisdiction over each employee. The Workers' Compensation policy shall have attached the "Voluntary Compensation Endorsement". The limit for Employer's Liability and the limit for Voluntary Compensation shall both be \$1,000,000 per occurrence.
- B. Comprehensive General Liability Insurance with a combined single limit per occurrence of \$1,000,000 for bodily injury and property damage, with an endorsement to cover Contractor's Liability under Paragraph 5 of the Work Agreement.
- C. Comprehensive Automobile Liability Insurance, including non-owned and hired vehicle coverage, with a combined single limit per occurrence of \$1,000,000 for bodily injury and property damage.

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- D. Contractual Liability Insurance (if not included in B above) with limits of \$1,000,000.

Where not contrary to law, the insurance policies provided for herein shall contain a provision stating that the insurance underwriters waive all rights of subrogation in favor of McKesson for the Workers' Compensation and Employer's Liability policies. Further, all other policies shall name McKesson as an additional insured and contain a provision stating that insurance underwriters shall waive all rights of subrogation in favor of McKesson.

Certificates evidencing the required insurance shall be delivered to McKesson prior to commencement of work and shall provide that any change in or cancellation of any policy(ies) under which certificates are issued shall not be valid as respects McKesson until McKesson has received at least thirty (30) days' written notice of such change or cancellation.

7. INDEPENDENT CONTRACTOR.

You shall be an independent contractor with respect to the performance of all work hereunder, and neither you nor your employees nor subcontractors nor their employees shall be deemed for any purpose to be the employee, agent, servant or representative of McKesson.

8. RIGHT TO AUDIT.

You and your subcontractors shall each maintain a true and correct set of records pertaining to the work to be performed hereunder, which shall be subject to inspection by McKesson or its representatives hereunder.

9. TERMINATION.

McKesson may, at its absolute discretion, stop said work at any time, and where you are not in default hereunder. McKesson agrees to pay you for all work theretofore done and all materials theretofore furnished pursuant to this Agreement.

10. ASSIGNMENT; SUBCONTRACTING.

You shall not assign this Agreement or subcontract the whole or any part of said work without McKesson's prior written consent.

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11. OTHER AGREEMENTS.

No contract, agreement, papers, document, delivery ticket, invoice, work order and/or any form used by you in connection with the service rendered pursuant hereto shall in any way modify, alter, amend or change any of the terms or conditions set out herein unless it is signed by persons of equal position and authority within their respective companies to those signing this Agreement.

12. FORCE MAJEURE.

Either party shall be absolved from its obligations hereunder when and to the extent that performance is delayed or prevented (and, in McKesson's case, when and to the extent that its need for the articles, materials or work to be supplied hereunder is reduced or eliminated) by reason of acts of God, or of force majeure, fire, riot, explosion, war, strikes, labor disputes or governmental laws, orders or regulations.

13. GOVERNING LAW.

McKesson and you agree that the laws of the state where the work is performed will control as to all aspects of this Agreement and its interpretation, and that all definitions contained therein shall be applicable here except where this Agreement may expressly provide otherwise.

McKESSON CHEMICAL COMPANY  
a division of McKesson Corporation

By \_\_\_\_\_

Its \_\_\_\_\_

\_\_\_\_\_  
(Name of Contractor)

By \_\_\_\_\_

Its \_\_\_\_\_

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**McKesson**  
**Operations**

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| GENERAL SAFETY         | 10.10      | 1              |     |
| Subject                | Issue Date | Effective Date |     |
| HAZARDOUS WASTE POLICY | 9/15/85    | 9/15/85        |     |

**GENERAL**

It is McKesson's policy to minimize its generation of hazardous wastes. This will be accomplished through engineering controls, careful operating practices, continued training and education of our employees, and recommendations to our customers who use returnable containers.

When hazardous wastes are generated, it is McKesson's policy to manage those wastes in an environmentally sound and legally acceptable manner. McKesson will neutralize acidic or alkaline wastes on-site as necessary prior to discharge to sewer. McKesson will also treat its generated wastes on-site as appropriate to reduce their volume and/or their degree of hazard. If on-site treatment is not feasible, McKesson will utilize recycling or incineration as environmentally sound alternatives. It is McKesson's policy to not dispose of waste in landfills or by deep well injection unless no other viable disposal alternatives are available.

**DISPOSAL  
GUIDELINES**

**A. Organic Waste**

**1. Liquids**

- a. Neutral liquids (for example, hose drainage, IPA line flushing)  
Recycle or incinerate
- b. Acidic liquids (for example, acetic acid)  
Neutralize and sewer
- c. Alkaline liquids (for example, DEA)  
Incinerate

**2. Solids**

- a. Neutral solids (for example, Methocel)  
Incinerate
- b. Acidic solids (for example, oxalic acid)  
Neutralize and sewer or incinerate

**MKIL40176**

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| GENERAL SAFETY         | 10.10      | 2              |     |
| Subject                | Issue Date | Effective Date |     |
| HAZARDOUS WASTE POLICY | 9/15/85    | 9/15/85        |     |

DISPOSAL  
GUIDELINES  
(Cont.)

3. Liquid/solid mixture (for example, partially polymerized styrene)  
Incinerate

4. Spartanburg Drum Plant Sludge  
Incinerate

5. Samples

- a. Retained samples  
Return to next packaging run
- b. Sales samples  
Offer to local customer or return to supplier

B. Inorganic Waste

1. Liquids

- a. Dilute aqueous liquids (for example, diked rainwater)  
Treat on-site to minimum quality necessary to sewer
- b. Acidic and alkaline liquids (for example, hose drainage, drum rinsate)  
Neutralize and sewer
- c. Concentrated liquids (for example, silicates)  
Offer to manufacturer

2. Solids

- a. Acidic and alkaline solids (for example, soda ash and oxalic acid)  
Neutralize and sewer
- b. Neutral solids (for example, calcium chloride and nonhazardous floor sweepings)  
Trash for nonhazardous  
Incinerate hazardous

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| Section                | Reference  | Page           | End |
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| HAZARDOUS WASTE POLICY | 9/15/85    | 9/15/85        |     |

DISPOSAL  
GUIDELINES  
(Cont.)

3. Samples

- a. Retained samples  
Return to next packaging run
- b. Sales samples  
Offer to local customer or return to supplier

C. Others

1. Empty drums

- a. Metal  
Return to reconditioner
- b. Polydrums  
Incinerate

2. Empty bags  
Incinerate

3. Empty sample bottles  
Reuse for the same product or

- a. Inorganic  
Triple rinse with water and trash
- b. Organic  
Triple rinse with isopropanol flush solution and trash

4. Laboratory wastes

- a. Organic  
Incinerate
- b. Aqueous  
Neutralize and sewer
- c. Solids  
Incinerate

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**McKesson**  
**Operations**

| Section                           | Reference  | Page           | End |
|-----------------------------------|------------|----------------|-----|
| GENERAL SAFETY                    | 10.11      | 1              |     |
| Subject                           | Issue Date | Effective Date |     |
| CHEMICAL WASTE HANDLING AGREEMENT | 6/30/86    | 6/30/86        |     |

**PURPOSE** To ensure consistent management of customer wastes transferred to MEC.

**POLICY**

1. The Chemical Waste Handling Agreement (Exhibit 1), Law Department form M-4/21/86, is to be completed for all customer waste transactions except those covered under the Joint Marketing Agreement between MCC and ENSCO.
2. The Chemical Waste Handling Agreement (Exhibit 1) must be completed at the Area or Regional level.
3. Any variance from the Chemical Waste Handling Agreement (Exhibit 1) requires the approval of the Law Department.

**PROCEDURES**

1. In completing the Chemical Waste Handling Agreement (Exhibit 1), delete handling methods (Section 2) which do not apply. The handling methods are:
  - a. recycling, reclamation, recovery of blending into waste derived fuels;
  - b. purchase of Generator's Waste Materials;
  - c. refining
2. Under Section 5, delete the two pricing arrangements which do not apply. Price arrangements correspond with the selected handling method:
  - a. Generator pays MCC;
  - b. MCC pays Generator;
  - c. Generator pays MCC for refined Waste Materials.

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**McKesson**  
**Operations**

| Section                           | Reference  | Page           | End |
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| CHEMICAL WASTE HANDLING AGREEMENT | 6/30/86    | 6/30/86        |     |

PROCEDURES  
(Cont.)

3. Complete Appendix "A" by inserting the address of the appropriate Service Center in the space for "Identified Facility." If MCC is to arrange transportation by others, the name of the carrier(s) is (are) to be inserted under "Subcontractors." The carrier must be EPA and/or State approved and registered with a current Certificate of Insurance on file.
4. An approved Spent Materials/Waste Products Survey and accompanying analysis is to be attached as Appendix "B".
5. If handling method (c) (refining), is selected, attach an Appendix "C" consisting of the Generator's specifications.

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CHEMICAL WASTE HANDLING AGREEMENT

On this \_\_\_\_\_ day of \_\_\_\_\_ 198\_, the parties, McKesson Chemical Company, a division of McKesson Corporation, a Maryland corporation with offices at \_\_\_\_\_, \_\_\_\_\_ (hereinafter called "Contractor"), and \_\_\_\_\_, a \_\_\_\_\_ [corporation, partnership or sole proprietorship] with offices at \_\_\_\_\_ (hereinafter referred to as "Generator"), have agreed as follows:

1. Waste Materials. During the term of this Agreement, Generator will deliver or cause to be delivered to Contractor, certain waste materials generated at its facilities specified in Appendix "A" attached hereto and incorporated herein by reference (the "Originating Facility"). The characteristics, composition, quantity and concentrations of the hazardous constituents of all such materials (the "Waste Materials") are accurately described in Appendix "B," consisting of a Spent Materials/Waste Products Survey and accompanying analysis. The term "Waste Materials" also includes containers described on Appendix "B," which is made a part hereof, if they are to be supplied by Generator. It is understood and agreed that Contractor bases its (or its subcontractor's) testing and evaluation procedures on the descriptions furnished by Generator and that any change in the characteristics, composition, quantity or concentrations of the hazardous constituents of the Waste Materials would require a modification of this Agreement.

2. Handling Methods. Contractor (or those subcontractors approved herein) shall handle Generator's Waste Materials delivered hereunder in the following manner: [DELETE SECTIONS NOT APPLICABLE]

a. Collect (pick-up) and transport, or receive, the Waste Materials from the Originating Facility to a McKesson EnviroSystems Company facility identified in Appendix "A," to be reclaimed, recovered, recycled, or blended into waste-derived fuels for use in industrial kilns, furnaces or boilers; and cause any remaining residues to be disposed of by incineration at the ENSCO, Inc., facility in El Dorado, Arkansas. It is understood and agreed that the Waste Materials may be temporarily stored at a facility of Contractor identified in Appendix "A" before they are transported to McKesson EnviroSystems Company. Hereafter, all facilities identified in this subsection 2(a) are referred to collectively as "the Identified Facility."

-OR-

b. Purchase from Generator, and Generator agrees to sell, the Waste Materials generated by Generator at the Originating Facility.

-OR-

c. Collect (pick-up) and transport, or receive, the Waste Materials from the Originating Facility to a McKesson EnviroSystems Company facility identified in Appendix "A"; refine the Waste Materials to the specifications set forth by Generator in Appendix "C" which is made a part hereof; return the refined materials to Generator, packaged, labeled and transported in accordance with applicable law; and cause any remaining residues to be disposed of by incineration at the ENSCO, INC. facility in El Dorado,

Arkansas. It is understood and agreed that the Waste Materials may be temporarily stored at a facility of Contractor identified in Appendix "A" before they are transported to McKesson EnviroSystems Company for refining. Hereafter, all facilities identified in this subsection 2(c) are referred to collectively as "the Identified Facility."

3. Approval of Handling Methods and Facilities. By its execution of this Agreement, Generator acknowledges and consents to the handling methods and the use of any Identified Facility specified herein, which handling methods and Identified Facility shall not be changed by Contractor without Generator's prior written consent.

4. Transfer of Waste and Title. Generator's Waste Materials will be tendered to Contractor at the place, time and volume specified as typical in Appendix "A." In order to allow Contractor to properly schedule, Generator will furnish Contractor with not less than fifteen (15) business days' notice of all intended transfers of the Waste Materials hereunder. Contractor may require Generator to hold the Waste Material longer, not to exceed 90 days, while consolidating or shipping arrangements are made. Contractor shall have the right, but not the obligation, to inspect, sample, analyze, or test any tendered Waste Materials before accepting such Waste Materials. It is understood and agreed that Contractor may subcontract such inspection, analysis, or testing to one or more of the subcontractors approved herein. Failure or refusal of Generator to provide Contractor with access to tendered waste materials or their shipping containers prior to Contractor's acceptance, shall be deemed a non-conforming tender of those Waste Materials. Contractor's exercise of, or failure to exercise, said right to inspect and sample shall not operate to relieve Generator of its responsibility or liability under this Agreement.

Subject to the remaining provisions of this Section 4 relating to non-conforming Waste Materials, at the time Contractor removes or otherwise takes possession of the Waste Materials from the Originating Facility, title, risk of loss and all other incidents of ownership to the Waste Materials shall be transferred from Generator and vested in Contractor. Any marketable or useable material Contractor may recover from the Waste Materials shall be the sole property of Contractor.

In the event that any or all Waste Materials are discovered to be non-conforming before they are consolidated or commingled with another generator's waste or otherwise altered by Contractor, Contractor may refuse to accept, or revoke its acceptance of, the Waste Materials. A justified revocation of acceptance shall operate to revert title, risk of loss and all other incidents of ownership in Generator, at the time revocation and reasons therefor are communicated orally or in writing to Generator. Waste Materials shall be considered non-conforming, for purposes of this Agreement, if they do not conform to the description provided by Generator in Appendix "B." Contractor may in its sole discretion accept, reject, or revoke acceptance of Waste Materials that it (or an approved subcontractor) determines to be non-conforming or to have been tendered with a deficient hazardous waste manifest.

If Contractor rejects or revokes acceptance of some or all Waste Materials, it will promptly notify Generator. Waste Materials Contractor has refused to accept, or for which Contractor has revoked its acceptance, shall be properly handled and returned to Generator within a reasonable time, after notice of refusal or revocation of acceptance has been received by Generator, unless within such time the parties agree in writing to some alternative manner of materials handling and/or lawful disposition. Generator shall pay Contractor its reasonable expenses and charges for analysing, handling, loading, preparing, transporting, storing and caring for non-conforming Waste Materials returned to Generator under this paragraph. In the event that Contractor agrees in writing to accept non-conforming Waste Materials or the parties agree in writing to some alternative manner of materials

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handling and/or lawful disposition of non-conforming Waste Materials, payment shall be made in accordance with the parties' further agreement.

5. Price. [DELETE SECTIONS NOT APPLICABLE]

a. Generator shall pay Contractor according to Appendix "A" which is made a part hereof.

-OR-

b. Contractor shall pay Generator according to Appendix "A" which is made a part hereof.

-OR-

c. Generator shall purchase the refined materials from Contractor according to Appendix "A" which is made a part hereof.

6. Billing. Payment shall be due not later than thirty (30) days of invoice or statement. Contractor shall retain copies of invoices or statements for a period of five (5) years, as a record of the handling procedures implemented.

7. Term. This Agreement shall have a term of one year from the date hereof. Except as may otherwise be provided in Section 8 below, either party may terminate this Agreement, with or without cause, on sixty (60) days' prior written notice to the other party.

8. Contractor Warranties. Contractor represents and warrants that: (a) it is engaged in the business of transporting and temporarily storing the Waste Materials and that it shall do so in a safe and workmanlike manner; (b) it has obtained all necessary permits and licenses and will transport and temporarily store the Waste Materials in full compliance with all existing and applicable governmental laws, regulations, orders and manifests; (c) the Identified Facility is now licensed and permitted to accept and handle waste materials as described in Section 1 and Appendix "B"; and (d) in the event the Identified Facility loses its permitted status hereafter during the term of this Agreement, Contractor will promptly notify Generator of such loss of permitted status. Generator, at its sole option, may then immediately terminate this Agreement.

9. Generator Warranties. Generator represents and warrants that: (a) the description and specifications of its Waste Materials, made in Section 1 and Appendix "B," is true and correct, fairly advises Contractor of the hazards and risks known by Generator to be incident to the collection, transportation, storage, reclamation, recovery, recycling, blending, refining or incineration (whichever is or are among the handling methods specified herein) of the Waste Materials, and is otherwise in full compliance with all materials description requirements of applicable statutes, ordinances, orders, rules and regulations; (b) Waste Materials to be transferred to Contractor hereunder will conform to said description and specifications; (c) Generator has obtained and shall keep in effect all permits, licenses, registrations, and certificates of approval which Generator may be required to have for the tender of Waste Materials and, if applicable, the transport of the Waste Materials to Contractor in compliance with all applicable laws, regulations and orders; (d) if Generator is to supply containers of Waste Materials, the containers shall be fit and proper for the purposes for which they are intended, and will be marked, labeled, packaged and otherwise comply with all DOT and other applicable governmental laws, regulations and orders; (e) it

holds clear title to all Waste Materials to be transferred hereunder; (f) it is under no legal restraint or order which would prohibit transfer of possession or title to such materials to Contractor for the handling methods specified herein; (g) if it receives information during the term hereof that its Waste Materials present or may present a material hazard or risk to persons or the environment which was not disclosed in Appendix "B," Generator shall promptly report such information to Contractor, which information shall include, but not be limited to, any relevant notification of substantial risk required to be given to the Generator by the raw or ingredient material supplier(s) pursuant to Section 8(e) of the Toxic Substances Control Act; (h) if regulations promulgated or revised under Section 3001 of the Resource Conservation Recovery Act of 1976, as amended, identify the Waste Materials as "hazardous waste" either by characteristics or listing, Generator, prior to tendering any waste products to Contractor, has filed or will file with the appropriate governmental agency the preliminary notification required by Section 3010(a) of the above Act, and provide Contractor with evidence thereof; and (i) if the Waste Materials are, or contain, hazardous substances as defined pursuant to Section 101(14) of the Federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Generator has and will advise Contractor in writing, prior to tendering or delivering to Contractor any Waste Materials containing a reportable quantity of any hazardous substance or substances pursuant to Section 102 of said Act, specifying those hazardous substances present in a reportable quantity.

10. Indemnification. Contractor agrees to indemnify, save harmless and defend Generator from and against any and all liabilities, penalties, forfeitures, suits, losses, damages, and costs and expenses (including costs of defense, settlement and reasonable attorney, consultant or other professional fees and the reasonable costs of investigation, containment and cleanup), which Generator may hereafter incur, become responsible for or pay out as a result of death or bodily injury to any person, destruction or damage to or loss of use of any property, contamination of or adverse effects on the environment, or any violation of governmental laws, regulations or orders, to the extent caused by: (i) Contractor's breach of any representation, warranty, term or provision of this Agreement; or (ii) the negligence or intentional misconduct of Contractor, its employees or agents, in the performance of this Agreement. This indemnification provision shall survive the termination of this Agreement.

Generator agrees to indemnify, save harmless and defend Contractor from and against any and all liabilities, penalties, forfeitures, suits, losses, damages, and costs and expenses (including costs of defense, settlement and reasonable attorney, consultant or other professional fees and the reasonable costs of investigation, containment and cleanup), which Contractor may hereafter incur, become responsible for or pay out as a result of death or bodily injury to any person, destruction or damage to or loss of use of any property, contamination of or adverse effects on the environment, or any violation of governmental laws, regulations or orders, to the extent caused by: (i) Generator's breach of any representation, warranty, term or provision of this Agreement; or (ii) the negligence or intentional misconduct of Generator, its employees or agents, in the performance of this Agreement. This indemnification provision shall survive the termination of this Agreement.

11. Insurance. Contractor shall maintain, at its expense, during the term of this Agreement, insurance (or self-insurance) for (i) statutory Workers' Compensation and (ii) General Liability, including contractual liability coverage, with limits of not less than \$5,000,000 combined single limit for bodily injury and property damage, insuring its obligations hereunder.

12. Work on Generator's Premises. Generator agrees to provide Contractor, its employees and subcontractors a safe working environment for any work, in performance of this Agreement, which must be undertaken on premises owned or controlled by Generator. Contractor, its

employees and subcontractors shall comply with Generator's reasonable safety procedures while on Generator's premises, provided such procedures are conspicuously and legibly posted in the working area or have been delivered, in writing, to Contractor prior to the commencement of work on Generator's premises.

13. Subcontractors. Generator's execution of this Agreement evidences its consent to Contractor's contracting with the parties set forth on Appendix "A" which is made a part hereof, with respect to certain services to be performed hereunder.

14. Excuse of Performance. The performance of this Agreement, except for the payment of money for services already rendered or for Waste Materials already purchased, may be suspended by either party in the event the tender of the Waste Materials by Generator to Contractor, or the handling (as specified herein) of the Waste Materials by Contractor is prevented by a cause or causes beyond the reasonable control of such party. Such causes shall include, but not be limited to, acts of God, acts of war, riot, fire, explosion, accident, flood, civil disorders or sabotage; lack of adequate fuel, power, raw materials, labor or transportation facilities; governmental laws, regulations, requirements, orders or actions; breakage or failure of machinery or apparatus; national defense requirements, injunctions or restraining orders; labor trouble, strike, lockout or injunction (provided that neither party shall be required to settle a labor dispute against its own best judgment).

15. Delegation and Assignment. Except as may otherwise be provided in Section 13 herein or in Appendix "A," Contractor may not, without the prior written consent of Generator, delegate or assign the performance of the services specified herein, or any portion thereof, which is by this Agreement undertaken by Contractor, or cause the handling of the Waste Materials at any facility not specified herein.

16. Tender of Delivery. Generator shall tender to Contractor or its subcontractors those properly completed documents, shipping papers or manifests as are required for lawful transfer of the waste materials to Contractor by valid and applicable statutes, ordinances, orders, rules or regulations of federal, state or local governments.

17. Transportation. If this Agreement provides that Contractor is to provide collection (pick-up) and transportation services, selection of transportation vehicles or vessels, times of travel and route shall be solely determined by Contractor. In selecting such vehicles or vessels compatible with the Waste Materials, Contractor shall rely on Generator's description of the Waste Materials.

18. Independent Contractor. In the event that Contractor is to provide any services under this Agreement, it shall perform such services as an independent contractor and Contractor agrees not to represent itself as an agent or legal representative of Generator for any purpose whatsoever.

19. Notice. Any notice to be given under this Agreement shall be in writing and delivered to the address of the respective party below:

Generator: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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CHEM OP 10.11 Exhibit 1  
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Page 6 of 7

Contractor: McKesson Chemical Company

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Either party may, by notice to the other, change the addresses and names above given.

20. Entire Agreement. This Agreement, together with its appendices, represents the entire understanding between the parties hereto relating to the matters addressed herein and supersedes any and all prior agreements, whether written or oral, that may exist between the parties. No modification or waiver of any provision of this Agreement shall be of any force or effect unless in writing and signed by the party claimed to be bound thereby. In no event shall the preprinted terms or conditions found on any Contractor or Generator purchase or work order, or invoice or statement, be considered an amendment or modification of this Agreement, even if such documents are signed by representatives of both parties: such preprinted terms or conditions shall be considered null and void and of no force or effect. Nor shall prior courses of dealing or usages of trade be used to modify, vary, supplement, or explain any provision of this Agreement.

21. Attorneys' Fees. If any legal action is commenced because of an alleged dispute, breach, default, or misrepresentation in connection with any of the provisions of this Agreement, the prevailing party shall be entitled to recover attorneys' fees and costs, in addition to any other relief to which it may be entitled.

22. Law to Govern. This Agreement and its attached appendices shall be governed by the laws of the State of California, except that this Agreement shall be given a fair and reasonable construction in accordance with the intention of the parties and without regard to, or aid of, Section 1654 of the California Civil Code.

In Witness Whereof, the parties have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

McKESSON CHEMICAL COMPANY

By: \_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

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APPENDIX "A"

1. Originating Facility:

2. Identified Facility:

McKesson Chemical Company

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

McKesson EnviroSystems Company

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Tender of Waste Materials:

Place: \_\_\_\_\_

Time: Gallons \_\_\_\_\_ Pounds \_\_\_\_\_  
Drums \_\_\_\_\_ Other \_\_\_\_\_

Per: Day \_\_\_\_\_ Week \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_  
One Time \_\_\_\_\_

4. Price:

5. Subcontractors: McKesson EnviroSystems Company

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**McKesson**  
**Operations**

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- POLICY** Each Service Center and Stockpoint will be prepared, equipped and trained to respond to emergency situations. These include, but are not limited to:
- Fire and/or explosion
  - Chemical spills or materials releases
  - Natural disasters.
- PROCEDURES**
1. Each McKesson chemical facility will have and maintain a current Contingency Plan and Procedures: Chemical Emergency Preparedness and Related Activities.
  2. Each plan will designate an Emergency Coordinator and Alternate Emergency Coordinator.
  3. Plans will contain a current site plan, designating the locations of emergency response equipment, evacuation routes and evacuation assembly points.
  4. Copies of plans will be maintained at the facility and with the appropriate Regional Operations Manager. Copies will also be provided to organizations (such as local First Responders) designated in the plan as assuming some role in an emergency.
  5. Each facility will be equipped with the appropriate Emergency Response Kit (Exhibit 1).
    - Kit A - designed for all warehouse or packaged material locations
    - Kit B - designed for all bulk or repackaging locations
    - Kit C - designed for all compressed gas repackaging locations.
- GENERAL EMERGENCY GUIDELINES**
1. Assess the event.
  2. Activate the Contingency Plan.

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# McKesson Operations

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## GENERAL EMERGENCY GUIDELINES (Cont.)

3. Decide on and implement a course of action.

- rescue injured or endangered persons
- prevent container failure
- contain hazard

4. Clean up and recover from the event.

## EMERGENCY CALL LIST

A current emergency telephone call list of work and home phone numbers for McKesson Emergency Coordinators and other responsible individuals is maintained at CHEMTREC, the chemical emergency communication service of the CMA (1-800-424-9300).

Notify Home Office Operations of any changes in home or work phone numbers and designated emergency coordinators so that the CHEMTREC list can be updated in a timely manner. Revised call lists will be sent from Home Office Operations to emergency coordinators, alternates and other responsible individuals within McKesson when changes occur, or at least bi-monthly.

## REPORTING

All emergencies must be reported to Regional Operations Manager or the Vice President of Operations, Home Office or their staffs, as promptly as possible. This is in addition to other reporting that may be required. Refer to Sections 30.61 and 100.10 for details.

## ASSISTANCE TO CUSTOMERS, FIRST RESPONDERS AND OTHERS

Facilities will be prepared to assist customers, transportation companies, first responders and the public in the event of an emergency involving McKesson chemical products. The Chemical Emergency Report (Exhibit 2) may be used to obtain information useful to determining the type of response needed.

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## McKesson Operations

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ASSISTANCE  
TO  
CUSTOMERS,  
FIRST  
RESPONDERS  
AND OTHERS  
(Cont.)

If the incident could result in a products liability claim against McKesson, a responsible representative must go to the scene and talk to the claimant to determine the extent and cause of alledged damages. All conversations with the customer should be noted in writing in a timely manner.

Responsible McKesson representatives should be dispatched in the following order, as available.

- 1 - Service Center Manager or Assistant
- 2 - Service Center Operations Manager
- 3 - Service Center Sales Person.

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**McKesson**  
**Operations**

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GENERAL  
GUIDELINES  
FOR  
EMERGENCIES  
(Cont.)

Note: Supplementary pallets need not have the pioneer tools.

- Large flashlights with spare batteries.
- 2 sets of protective pants and boots, with chemical gloves and goggles.
- Recovery drum.

B Pallet (minimum of one for each Service Center with one or more tank truck or bulk facilities)

- Small capacity powered pump, 2 x 100 ft of hose and fittings. (Air-powered diaphragm pump, such as Wilden Model M-2)<sup>1</sup>
- Pump accessories, hose, etc., as needed.
- Two or more rolls of polyethylene sheeting.
- Absorbent pads or rolls.
- Absorbent floating booms.
- Two mech. jacks with 12" (or more) lift.<sup>2</sup>
- Tank truck lifting straps. (2 @ 45,000# ea. cap.)<sup>3</sup>
- 2 x 100ft coils of 1/2" nylon rope.

- <sup>1</sup> The pump will be worked off tractor air or any other air source. See Wilden, Exhibit 3.
- <sup>2</sup> Jacks can be obtained from Duff-Norton, Exhibit 4.
- <sup>3</sup> Lifting straps from Lift-All, Exhibit 5.

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**McKesson**  
**Operations**

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GENERAL  
GUIDELINES  
FOR  
EMERGENCIES  
(Cont.)

- Heavy duty tools:
  - Crowbar, Wrecking Bar
  - Hammer
  - Pipe Wrenches
  - Hacksaw with spare blades
  - Cable Hoist (come-along)
  - 2ft x 2ft Rubber Sheet
  - 30ft of 1/2" Chain with hooks and turnbuckles
- Two full protective suits and boots, with chemical gloves and goggles.
- Accessories: (variable additions)
  - Scott Air Paks, MSA Industrial Gas Masks, Oxygen Masks, etc.
  - 4 x 10 lb. ABC Fire Extinguishers
  - 2 sets Triangle Emergency Markers
  - First-Aid Kits
  - Recovery Drums
  - Empty OH Drums with heavy-duty polyethylene liners, heads, closure rings, hazardous waste labels, etc.
- Come-along Hoist
- Bung Wrench, large
- Bung Wrench, small
- Spigot, large
- Spigot, small
- Bottle Neutralizer Eye Wash
- Delpump
- 2 Brooms, stiff bristle, push-type
- Crescent Wrench

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**McKesson**  
Operations

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GENERAL  
GUIDELINES  
FOR  
EMERGENCIES  
(Cont.)

- Hazard Label Set
- Derma-Tek 240 Skin Cream

Note: The Emergency Reaction Team Leader should have a binder with a copy of all Material Safety Data Sheets for items routinely stored at the facility. This information will be invaluable in neutralizing or controlling an emergency.

C Pallet (or) Chlorep Pallet (minimum of one for each Chlorine Plant)

- 2 MSA Gas Masks
- 2 Scott Air Paks
- 1 or 2 Emergency Kit A for cylinders
- 1 or 2 Emergency Kit B for tons
- Emergency Oxygen Unit
- Emergency Oxygen Tank (spare)
- Scott Air Pak Air Tank (spare)
- Handtruck with large tires and restraining chain for cylinders
- 2 pr. Rubber Gloves
- 2 pr. Leather Gloves
- 2 Suits, protective
- Flashlight with extra alkaline batteries

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**Operations**

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GENERAL  
GUIDELINES  
FOR  
EMERGENCIES  
(Cont.)

- Tool box with chlorine wrenches and crescent wrench; spare valves, yokes and adapters; tubing cutter and flaring set; 50ft roll of 3/8" soft copper type K tubing and flare nuts; and spare fiber and lead washers, outlet caps with gaskets and stem nuts.
- 3. Training and drills must be carried on periodically as needed to keep our personnel prepared and equipped to deal with emergencies.

II. With customers or other locations:

A. Application

Each Service Center shall be prepared to assist our customers, transportation companies, governmental authorities, and the public in any emergency involving our products, or even involving products within our expertise. A very vital point to cover when participating in emergency work outside our locations is the matter of liability where we are not initially at fault. Guidance as to our degree of response must be obtained from Area, Regional, or Home Office Operations. Other protection may include hold-harmless agreement from the customer or transportation company, and specific official authorization or deputization by governmental authorities before proceeding with any remedy, clean-up, etc.

- B. The same procedures and equipment described in Part I shall be employed, and applicable guidelines followed.

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GENERAL  
GUIDELINES  
FOR  
EMERGENCIES  
(Cont.)

C. Product Liability Claims

1. Another aspect of emergency procedures is for an occurrence at a customer's plant that may become a product liability claim. With prompt, careful, and accurate investigation and handling of such incipient cases, most can be held to reasonable limits.
2. Procedure:
  - a. When a report of a possible liability claim is received, someone from McKesson must investigate immediately in order to minimize or prevent the claim. A responsible representative from McKesson must go to the scene at once and talk with the claimant or his representative to determine the extent and cause of the alleged damage. The conversations with customer representative should be written and, if possible, have customer sign. This must be done in a timely manner before damage "grows" or accounts of the incident "change."
  - b. The order for persons to be dispatched to the scene is:
    - (1) Service Center Sales Manager or Assistant
    - (2) Service Center Operations Manager or Assistant
    - (3) Service Center Sales Person or other responsible person

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**Operations**

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GENERAL  
GUIDELINES  
FOR  
EMERGENCIES  
(Cont.)

- (c) At no time should any McKesson employee discuss "settling" or any other disposition of a product liability claim with a customer. Our Home Office RIM, Legal, and/or Operations must authorize this to be done and should have the opportunity to appoint a representative at the discussion.
- (d) Any time a product liability claim is suspected, the circumstances MUST be reported to Area and Regional Operations as soon as possible so that our insurance carrier can be notified and, if circumstances warrant, Home Office can be apprised with assistance/advice provided.
- (e) Any time a legal paper related to a claim is served on the Company, this information must be forwarded to Region for transmittal to Home Office Operations and Legal Department and on to RIM as soon as possible. Failure to promptly notify our insurance carrier can prejudice our position and possibly cause them to deny the claim.

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MK094607

MKIL189197

### **Emergency Equipment Inventory**

**McKesson Chemical Company maintains Emergency Equipment in standard boxes.**

**Kit A - is designed for all warehouse or packaged material locations.**

**Kit B - is designed for all bulk or repackaging locations.**

**Kit C - is designed for all compressed gas repackaging locations.**

**These kits are sealed and inspected at least four times per year during scheduled Safety and Compliance Reviews. They are reinventoried whenever a seal is broken.**

**Additional emergency equipment including items such as fire extinguishers are indicated in site plans.**

**The inventory for Kits A & B are attached. Refer to Sections 90.03 - 90.05 for information on Compressed Gas emergency response equipment.**

**MKIL40197**

**MK094608**

**MKIL189198**

CHEM OP 10.20 Exhibit 1  
10/15/86 10/15/86  
Page 2 of 5  
Kit A  
Inventory  
6/86  
i

### **Packing List and Reorder Guide for McKESSON Type A Response Kit**

To reorder any item in the kit simply identify it by identifying the KIT TYPE (in this case "B") and the number of the item on the list. [ie. to order a new non-sparking pipe wrench, identify it as B-39]

Mail your order along with your purchase order number to:  
Root Brothers Mfg. and Supply Co., Inc.  
10317 S. Michigan Ave.  
Chicago, IL 60628  
or telephone your order to (312) 264-5000

| <u>Item #</u> | <u>Quantity</u> | <u>Description</u>  |
|---------------|-----------------|---|
| 1             | 1ea             | Aluminum box, 3' d x 3' h x 4' w/handles and snaps  |
| 2             | 4ea             | Shovel, Non-sparking, D-handle, flat blade suitable for digging or scooping. S-84                                     |
| 3             | 1ea             | Pipe Wrench, Bryllium, non-sparking, 18"  |
| 4             | 2ea             | Rake, 14 tooth, Non-sparking w/60" handle; handle will be cut to fit in box R-  |
| 5             | 1ea             | Pick, 20" length, Non-sparking w/handle P-1   |
| 6             | 1ea             | Axe, single bit, 4 lb, non-sparking, w/handle A-5   |
| 7             | 6ea             | Lantern, 6v, anti-explosion w/circuit breaker bulb *2206  |
| 8             | 12ea            | Battery, 6v, Alkaline *529  |
| 9             | 3suit           | Protective Suit, PVC coated polyester fabric, jacket w/detachable hood, bib overall w/fly (2sz lg, 1sz x l) 1035/1037 |
| 10            | 3pr             | Boot, pull over shoe, knee high, yellow (2sz 10, 1sz 11) *91  |
| 11            | 3pr             | Boot, over sock, steel toe, rubber, black *21   |
| 12            | 12pr            | Glove, chemical resistant, 14", gauntlet HD, flexible, *1814  |
| 13            | 6pr             | Goggles, non-fogging, clear, SC-2   |
| 14            | 3ea             | Hard Hat w/face shield attachment & face shield, OSHA approved, 45-087-493  |
| 15            | 3ea             | Full face respirator equipped for acid gas, organic vapor, dust & mist w/inter nose piece, *1694-G104-F100            |
| 16            | 12ea            | Apron, protective, disposable   |
| 17            | 3ea             | Squeegee, extra h.d. 24" w/60" handles 3-24   |
| 18            | 3ea             | Push broom, h.d. 18" w/screw in handle 108-18   |
| 19            | 1ea             | Hand Truck, w/lrg 10" x 2.75" wheel, 400# capacity *40107   |
| 20            | 1ea             | First Aid Kit for 25 people, *530   |

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Kit A  
Inventory  
6/86 21  
ii

|    |       |   |
|----|-------|---|
| 21 | 1ea   | Hand pump, 600 GPH, Viton Diaphragm Delrin body w/10' of suction hose & 10' of discharge hose |
| 22 | 1kt   | Viton complete pump repair kit  |
| 23 | 100ft | Rope, 3/4" Manila, 100'   |
| 24 | 2ea   | Fire Extinguisher, 10* ABC  |
| 25 | 1ea   | Trouble light, DC powered, *05917   |
| 26 | 1ea   | Drum pump, polyethylene   |
| 27 | 6ea   | *15A rubber tie down straps   |
| 28 | 12pr  | Visitors specs, VS-1  |
| 29 | 2rl   | Duct tape, 2" x 60yd, *615  |
| 30 | 1rl   | Wire, 18GA, approx. 830ft   |
| 31 | 12ea  | Hose clamps, SS, *40H (for 2" ID hose)  |
| 32 | 1ea   | Tool box w/hand tools and socket set (NOT non-sparking)                                       |

A FEW ITEMS IN THIS KIT NEED INSPECTION OR REPLACEMENT ON A SCHEDULED BASIS.

ITEM A-8 SHOULD BE REPLACED ON AN ANNUAL BASIS.

ITEM A-24 MUST BE INSPECTED MONTHLY BY QUALIFIED PERSONNEL AND RECHARGED AS NECESSARY.

THE FIRE EXTINGUISHERS ARE DESIGNED FOR MOUNTING ON THE OUTSIDE OF THE KIT. ON THE RIGHT SIDE OF THE KIT THERE ARE TWO SLOTTED SCREWS. TO MOUNT ITEMS A-24 SIMPLY TAKE THE EXTINGUISHERS OUT OF THE KIT, REMOVE THE BRACKET FROM THE EXTINGUISHER BOX, REMOVE THE SCREW FROM THE RIGHT SIDE OF THE BOX, MOUNT THE BRACKET WITH THE SCREW THAT YOU REMOVED, AND HANG THE FIRE EXTINGUISHER.

THIS KIT IS DESIGNED TO BE SIMPLE AND EASY TO USE. IT IS FOR USE IN EMERGENCIES ONLY. IT IS NOT POSSIBLE TO COVER EVERY SITUATION THAT MIGHT ARISE. MANY OF THE ITEMS ARE DESIGNED FOR SHORT TERM USE. THIS KIT IS A DESIGNED FOR SUSTAINED USE IN HAZARDOUS SITUATIONS WITH DANGEROUS MATERIALS.

**WARNING!** TOOLS AND EQUIPMENT IN THIS KIT WILL CAUSE SPARKS. NON-SPARKING TOOLS HAVE BEEN SPECIFICALLY IDENTIFIED.

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Kit B  
Inventory  
6/86  
i

**Packing List and Reorder Guide for McKESSON Type B Response Kit**

To reorder any item in the kit simply identify it by identifying the KIT TYPE (in this case "B") and the number of the item on the list. [ie. to order a new non-sparking pipe wrench, identify it as B-39]

Mail your order along with your purchase order number to:

Root Brothers Mfg. and Supply Co., Inc.  
10317 S. Michigan Ave.  
Chicago, IL 60628

or telephone your order to (312) 264-5000

| <u>Item #</u> | <u>Quantity</u> | <u>Description</u>  |
|---------------|-----------------|---|
| 1             | 1ea             | Aluminum box, 3' d x 3' h x 4' w/handles and snaps                              |
| 2             | 1ea             | Pump, Air PolyPro 1" x 1" w/flanges, gasket & bolts M2/PO                       |
| 3             | 1kt             | Repair kit, complete, for above pump  |
| 4             | 1ea             | 125lb. pressure regulator for pump  |
| 5             | 2ea             | Hose, 1" EDPM/Nitrile, with Brass 1" NPT Fittings, 50'                          |
| 6             | 1ea             | Hose, 1/4" air, with fittings to hook up to air supply on tractor or compressor |
| 7             | 2rl             | Polyethylene Sheeting 2 RL 8 x 100, 4 Mil                                       |
| 8             | 2ea             | Boom, Arsoorb, Floating 10' x 5"  |
| 9             | 2ea             | Jack, 12" Lift, 22" long LJJ Hydraulic, Long Stroke                             |
| 10            | 2ea             | Strap, Tank Truck, Lift, EE2-812 x 20' Nylon Basket 53800*                      |
| 11            | 2ea             | Rope, 100' Manila, CN 121   |
| 12            | 1ea             | Crow Bar, #160, Pinch point   |
| 13            | 2ea             | Wrecking bar, #166, 3/4" x 36" x 5 1/4"   |
| 14            | 1ea             | Hammer, Brass 2"  |
| 15            | 1ea             | Hammer, Drilling 4"   |
| 16            | 1ea             | Pipe Wrench 14" Ridgid Straight   |
| 17            | 12pr            | Protective Glove, chemical resistant, 14" gauntlet, HD, flexible                |
| 18            | 2ea             | Pipe Wrench 18" Ridgid Straight   |
| 19            | 1ea             | Pipe Wrench 24" Ridgid Straight   |
| 20            | 1ea             | Hack Saw w/Blades, MF #48 - 6 18T Blades  |
| 21            | 1ea             | Come-Along, 2T, #10502  |

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Kit B  
Inventory  
6/86 22  
ii

|    |     |   |
|----|-----|---|
| 22 | 2ea | Rubber Sheet 2 x 2 x 1/8"   |
| 23 | 1ea | Chain, 30' x 1/2" Proof Coil w/1 grab hk & 1 slip hk, & 2 shackles      |
| 24 | 2ea | Turnbuckle 1/2" x 12" Forged J&J  |
| 25 | 2ea | Gas Mask, Organic Vapor, Acid Gas Ammonia *101 w/2 Cannister *2200      |
| 26 | 2ea | Protective Suit, Boots, Gloves & Goggles DIA 1037, 1035, ES 287 DIA *91 |
| 27 | 2ea | Fire Extinguisher, 4A60BC   |
| 28 | 2ea | Triangle Marker (set) HWT-3   |
| 29 | 1ea | First Aid Kit for 25 persons  |
| 30 | 2ea | Bung Wrench, 10 way, non spark *DPW                                     |
| 31 | 2ea | Spigot, PVC 1ea 2" & 1ea 3/4" *1155                                     |
| 32 | 2ea | Eyewash, Isotonic   |
| 33 | 1ea | Drum pump   |
| 34 | 2ea | Broom, Push w/Handle *108-18  |
| 35 | 2ea | Wrench, Adj Crescent 10" *77-10   |
| 36 | 4ea | Hazard Label Set 4 labels/set   |
| 37 | 1ea | Protective Hand Cream 6 oz.   |
| 38 | 2rl | Duct tape, 2" x 60 yd   |
| 39 | 1ea | Non-sparking bryllium pipe wrench                                       |

A FEW ITEMS IN THIS KIT NEED INSPECTION OR REPLACEMENT ON A SCHEDULED BASIS.

ITEM B-27 MUST BE INSPECTED MONTHLY BY QUALIFIED PERSONNEL AND RECHARGED AS NECESSARY.

THE FIRE EXTINGUISHERS ARE DESIGNED FOR MOUNTING ON THE OUTSIDE OF THE KIT. ON THE RIGHT SIDE OF THE KIT THERE ARE TWO SLOTTED SCREWS. TO MOUNT ITEMS A-24 SIMPLY TAKE THE EXTINGUISHERS OUT OF THE KIT, REMOVE THE BRACKET FROM THE EXTINGUISHER BOX, REMOVE THE SCREW FROM THE RIGHT SIDE OF THE BOX, MOUNT THE BRACKET WITH THE SCREW THAT YOU REMOVED, AND HANG THE FIRE EXTINGUISHER.

THIS KIT IS DESIGNED TO BE SIMPLE AND EASY TO USE. IT IS FOR USE IN EMERGENCIES ONLY. IT IS NOT POSSIBLE TO COVER EVERY SITUATION THAT MIGHT ARISE. MANY OF THE ITEMS ARE DESIGNED FOR SHORT TERM USE. THIS KIT IS NOT DESIGNED FOR SUSTAINED USE IN HAZARDOUS SITUATIONS WITH DANGEROUS MATERIALS.

**WARNING! TOOLS AND EQUIPMENT IN THIS KIT WILL CAUSE SPARKS. NON-SPARKING TOOLS HAVE BEEN SPECIFICALLY IDENTIFIED.**

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**CUSTOMER INCIDENT  
CHEMICAL EMERGENCY CHECK LIST**

**INSTRUCTIONS**

In the event of an incident reported by a customer, find out whom you are speaking to. Ask them if they have actually seen the situation first hand. If not, ask to speak to someone who has. Obtain as much of the information listed below as possible.

Name and telephone number (with area code) of caller: \_\_\_\_\_

Location (be specific, use address or milepost, include directions) \_\_\_\_\_

**Source and nature**

☐ leak ☐ explosion ☐ line rupture ☐ truck accident ☐ other \_\_\_\_\_

- number of dead or injured: \_\_\_\_\_

- identity of chemical released ( have customer spell out name or give UN/NA number of product): \_\_\_\_\_

- type and size of container from which release occurred: \_\_\_\_\_

- time of release : \_\_\_\_\_ AM or PM ?

- type of release : ☐ continuous ☐ intermittent ☐ instantaneous

- amount released so far: \_\_\_\_\_ ☐ lbs. ☐ gals. ☐ tons ?

- estimated total amount of chemical that MAY be released: \_\_\_\_\_ ☐ lbs. ☐ gals. ☐ tons ?

- present status of chemical ☐ gas ☐ liquid ☐ solid ☐ other \_\_\_\_\_

- is chemical entering

☐ atmosphere ☐ soil ☐ surface water (identify ) \_\_\_\_\_ ?

- direction of vapor clouds or liquid plume: \_\_\_\_\_

- weather conditions: \_\_\_\_\_

- countermeasures taken so far: \_\_\_\_\_

- local terrain conditions: \_\_\_\_\_

- other organizations notified

☐ fire ☐ police ☐ national response center ☐ other \_\_\_\_\_

information taken by : \_\_\_\_\_ (name)

\_\_\_\_\_ (signature) \_\_\_\_\_ (date)

**NOTE ANY ADVICE GIVEN ON PRECAUTIONS, SAFETY OR COUNTERMEASURES**

\_\_\_\_\_

**MKIL40202**

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CENTRAL REGION (Cont.)

|                                     |                |
|-------------------------------------|----------------|
| <u>St. Louis Area</u> - Nolan Payne | (314) 625-1886 |
| Burlington - John Tobin             | (319) 753-6346 |
| Kansas City - Alex Maslow           | (816) 455-2605 |
| Minneapolis - Ron Marchand          | (612) 537-5417 |
| Omaha - Leroy Jensen                | (402) 455-0741 |
| St. Louis - Charles Slaybaugh       | (314) 261-8255 |
| Springfield - Bill McPhail          | (417) 881-0115 |
| Wichita - Wayne Sondergard          | (316) 943-9643 |
| <br>                                |                |
| Dolton PRF - John Pesek             | (312) 449-0799 |
| Wichita PRF - Wayne Sondergard      | (316) 943-9643 |

WESTERN REGION

|                               |                |
|-------------------------------|----------------|
| <u>Region</u> - Dwight Landry | (714) 859-3670 |
| - Nick Gardner                | - Pending -    |

|  |                |
|--|----------------|
| <u>Houston Area</u> - Robert Sheffield | (713) 360-2849 |
| Amarillo - Patricia Curry              | (806) 488-2289 |
| Beaumont - Nancy Henderson             | (409) 866-4758 |
| Corpus Christi - Paul Klinger          | (512) 993-5667 |
| Dallas - Bill Jones                    | (817) 465-0549 |
| Houston - Tom Dillard                  | (713) 734-6334 |
| Oklahoma City - Dan Schneider          | (405) 722-5912 |
| San Antonio - Johnny DeLeon            | (512) 923-3440 |

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WESTERN REGION (Cont.)

|   |                    |
|---|--------------------|
| <u>Los Angeles Area</u> - Bill Crumm            | (714) 778-1897     |
| Albuquerque - Mick Eminger                      | (505) 281-9558     |
| Bakersfield - Jeff Keller                       | (805) 833-6130     |
| Los Angeles - Pending                           | - Pending -        |
| Orange County - Roger Wagner                    | (714) 840-2527     |
| Phoenix - Mike Bango                            | (602) 937-8319     |
| Riverside - JoAnne Rondilone                    | (714) 681-8256     |
| Tucson - Rose Siemens                           | (602) 297-3485     |
| <br><u>San Francisco Area</u> - Carl Piercy     | <br>(415) 284-4251 |
| Denver - George Martin                          | (303) 699-0109     |
| Fresno - Jennifer Hall                          | (209) 275-3783     |
| Grand Junction - Jerald Conyers                 | (303) 245-2707     |
| Portland - Jerry Jones                          | (503) 649-1522     |
| San Francisco - Ken Watson                      | (408) 259-0326     |
| Seattle - Jim Cook                              | (206) 631-8152     |
| <br>Santa Fe Springs Bulk Plant - Stan Barnhill | <br>(714) 528-9417 |

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HOME OFFICE OPERATIONS MANAGEMENT

HOME TELEPHONE NUMBERS

|                     |                                     |                |
|---------------------|-------------------------------------|----------------|
| Dick A. Davis       | VP, Operations &<br>Materials Mgmt. | (415) 547-3040 |
| Douglas L. Eisner   | Technical Director                  | (415) 937-7708 |
| Judith A. Cichowicz | Manager, Operations<br>Support      | (415) 825-9023 |
| Donald M. Black     | Regulatory<br>Compliance Mgr.       | (203) 966-8670 |

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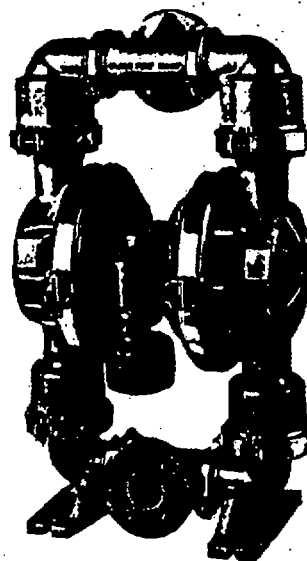
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MKIL189206

Introducing

# THE WILDEN "CHAMP"

**THE PUMP  
THE CHEMICAL  
PROCESS  
INDUSTRY HAS  
DEMANDED**



**A CORROSION-RESISTANT, SEALLESS, VIRTUALLY INDESTRUCTIBLE,  
INJECTION-MOLDED, SOLID . . .**

## **PVDF OR POLYPROPYLENE WILDEN PUMP**

Engineered by Wilden Pump and Engineering Co., the leader in Air Operated Diaphragm Pumps for 25 years, to solve your most difficult pumping problems. All the advantages of an Air Operated Diaphragm Pump plus the corrosion resistance of **PVDF or POLYPROPYLENE**. Traditional Wilden Quality at **competitive pricing**.

Available with the full range of Wilden elastomers including our award winning Teflon diaphragm. The "Champ" has 2-Inch flanged inlet and discharge connections. Capacity to 135 gpm.

- Etching Solutions
- Plating Solutions
- Acids/Bases
- Photographic Solutions
- Textile/Dye Solutions
- Solvents
- Pickling Solutions
- Aqua Regia
- Ferric Chloride

**"Our Business is making tough pumping jobs simple."**

# **WILDEN PUMP® & ENGINEERING CO.**

22069 Van Buren Street / Colton, CA 92324 / (714) 783-0621 / Telex (714) 676-452

MKIL40206

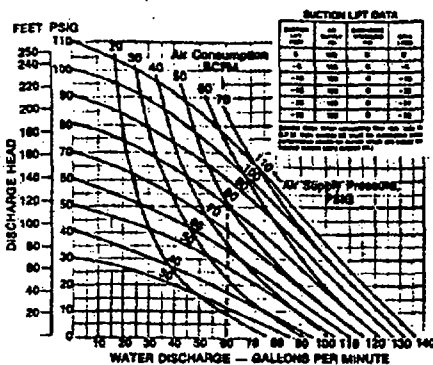
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# SPECIFICATIONS & PERFORMANCE

## WILDEN® MODEL M-8®

Height ..... 30"  
Width ..... 19 1/2"  
Depth ..... 13 1/2"  
Weight .....  
POLYPROPYLENE 60 lbs.  
PVDF ..... 100 lbs.  
Air Inlet ..... 1/2" N.P.T.  
Inlet ..... 2" Flanged  
Outlet ..... 2" Flanged  
Suction Lift ..... 20' Dry  
25' Wet  
Max. Size Solids 1/2" Dia.

Example: To pump 60 gpm against a discharge pressure of 50 psig, requires 80 psig and 50 scfm air consumption.  
CAUTION: Do not exceed 125 psig air supply pressure.

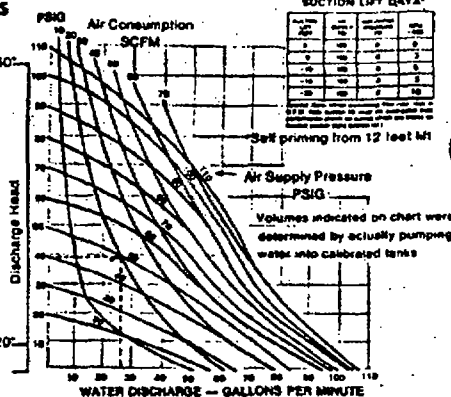


# SPECIFICATIONS & PERFORMANCE TEFLON DIAPHRAGMS

## WILDEN® MODEL M-8®

Height ..... 30"  
Width ..... 19 1/2"  
Depth ..... 13 1/2"  
Weight .....  
POLYPROPYLENE 60 lbs.  
PVDF ..... 100 lbs.  
Air Inlet ..... 1/2" N.P.T.  
Inlet ..... 2" Flanged  
Outlet ..... 2" Flanged  
Suction Lift ..... 12' Dry  
18' Wet  
Max. Size Solids 1/2" Dia.

Example: To pump 28 gpm against a discharge pressure of 40 psig, requires 50 psig and 20 scfm air consumption.  
CAUTION: Do not exceed 125 psig air supply pressure.



The Wilden "Champ" introduces a new dimension in handling corrosive, abrasive, or viscous liquids and slurries for the Chemical Process Industry. Engineered in response to your requests for a reliable, non-metallic, sealless, positive displacement pump, the "Champ" adds emphasis to the versatility of the Wilden Air Operated Diaphragm Pump line.

RELIABILITY, CORROSIVE RESISTANCE, AND SAFETY were key words in the "Champ" Research and Development Program.

RELIABILITY was insured by the decision to build the non-metallic wetted parts around the proven Wilden Air Valve System, and to incorporate the time tested Wilden M8 diaphragms in the "Champ" design.

CORROSIVE RESISTANCE centered on selection of materials. Wilden engineers spent many months analyzing the broad range of available thermoplastic, thermoset, and other non-metallic equipment and evaluation of their field experience as well as discussions with material suppliers and plastics fabricators led to the selection of PVDF and Polypropylene as the most suitable materials to complement the versatile Wilden Diaphragm Pump System.

POLYPROPYLENE has good chemical resistance, moderate heat resistance, and exceptional flex fatigue resistance at a reasonable cost.

PVDF (polyvinylidene fluoride), while higher in cost, offers exceptional chemical resistance, higher temperature resistance, and excellent mechanical properties.

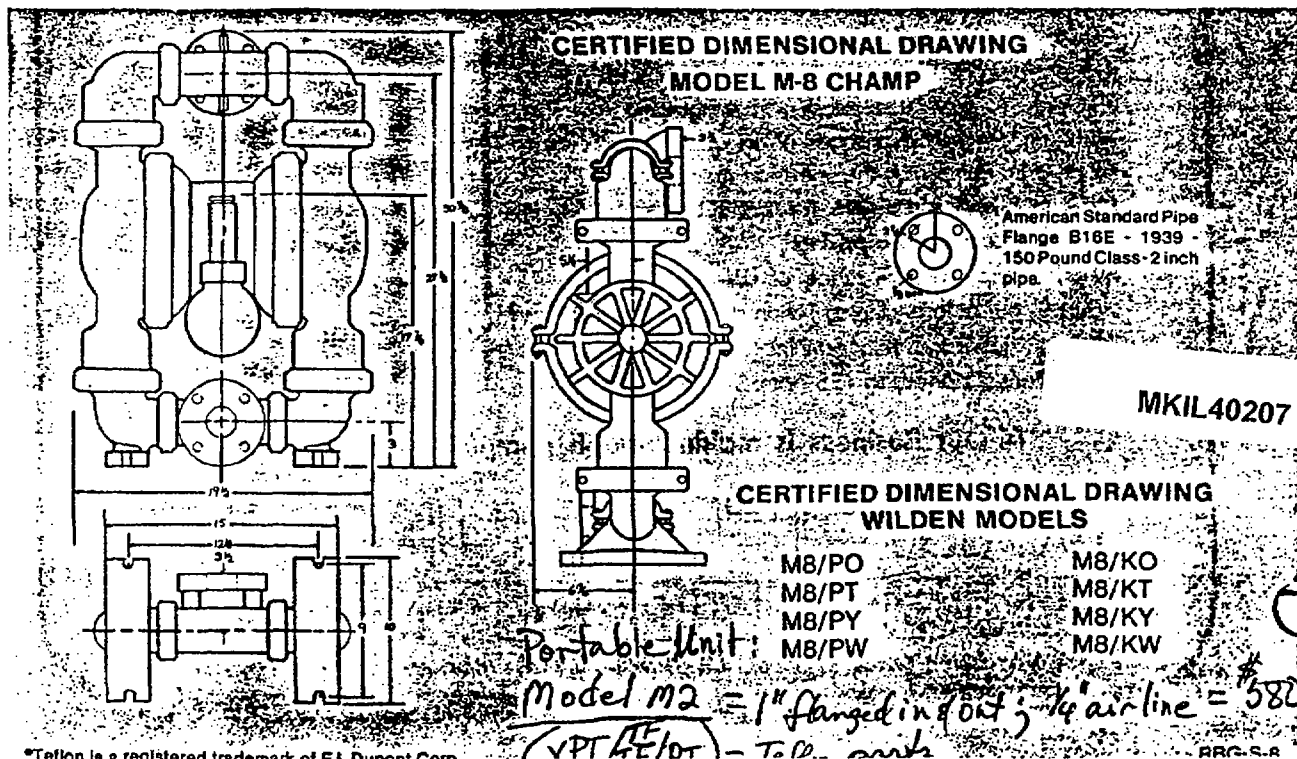
These materials in combination with either the patented Wilden Teflon® diaphragm or any one of four elastomeric materials offer the broadest possible range of compatibility with chemicals and solvents.

SAFETY is evident in the rugged appearance of the "Champ". The massive ribs of the water chambers, the large flanges with sturdy, specially designed stainless steel clamp bands, and thick wall sections are testimony to the efforts of Wilden engineers.

We proudly present the "Champ", a pump we build with care and pride to handle your most difficult assignments. We ask your cooperation in carefully selecting the appropriate materials for your specific applications. Many factors affect the chemical and mechanical properties of materials. These include, but are not limited to exposure time, extremes of temperature and pressure, frequency of temperature and/or pressure cycling and attrition due to abrasive particles. Wilden Air Diaphragm Pumps are also available in four sizes in Aluminum, Cast Iron, 316 Stainless Steel and Hastelloy C® for those applications where polypropylene and PVDF are not appropriate.

TEMPERATURE LIMITS: Polypropylene 150°F; PVDF 200°F

CAUTION: Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult engineering guides for chemical compatibility and temperature limits.



\*Teflon is a registered trademark of E.I. DuPont Corp.

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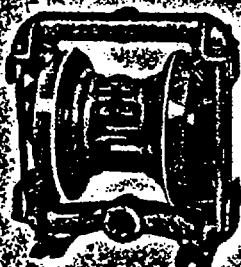
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Effective Date April 1, 1983

# WILDEN PUMP & ENGINEERING CO.

22069 VAN BUREN STREET, P.O. BOX 845, COLTON, CALIFORNIA 92324 / (714) 783-0821



## MODEL M-2 PUMPS

Simplicity  
Performance  
Versatility  
Reliability

Max. Size Solids 1/2" Dia.  
CAUTION: Do not exceed 125  
psig air supply pressure.



M-2/00

(Suggested U.S. Price Lists)

M-2/P

| Model<br>Inlet Hsg. | Materials of Construction |             | Inlet/<br>Outlet | Max.<br>GPM | Dimensions |         |       | Approx.<br>Wt. Lbs. | Suggested<br>Price FOB<br>Colton, CA |
|---------------------|---------------------------|-------------|------------------|-------------|------------|---------|-------|---------------------|--------------------------------------|
|                     | Wetted                    | Non-Wetted  |                  |             | Height     | Width   | Depth |                     |                                      |
| M2/00               | Alum./Steel               | Brass/Steel | 1" 3/4"          | 30          | 10 1/2"    | 10 1/2" | 7"    | 22                  | 345.00                               |
| M2/BO*              | Aluminum/<br>S.S.         | Brass/Steel | 1" 3/4"          | 30          | 10 1/2"    | 10 1/2" | 7"    | 22                  | 425.00                               |
| M2/SO               | 316 S.S.                  | Brass/Steel | 1" 3/4"          | 30          | 10 1/2"    | 10 1/2" | 7"    | 34                  | 715.00                               |
| M2/HO               | Hastelloy "C"             | Brass/Steel | 1" 3/4"          | 30          | 10 1/2"    | 10 1/2" | 7"    | 34                  | 1765.00                              |

### Model M2 Pumps with Teflon Diaphragms, Teflon Ball Valves, and Teflon Valve Seat O-rings

|        |                   |             |         |    |         |         |    |    |         |
|--------|-------------------|-------------|---------|----|---------|---------|----|----|---------|
| M2/TO  | Alum./Steel       | Brass/Steel | 1" 3/4" | 25 | 10 1/2" | 10 1/2" | 7" | 22 | 525.00  |
| M2/BT* | Aluminum/<br>S.S. | Brass/Steel | 1" 3/4" | 25 | 10 1/2" | 10 1/2" | 7" | 22 | 575.00  |
| M2/ST  | 316 S.S.          | Brass/Steel | 1" 3/4" | 25 | 10 1/2" | 10 1/2" | 7" | 22 | 895.00  |
| M2/HT  | Hastelloy "C"     | Brass/Steel | 1" 3/4" | 25 | 10 1/2" | 10 1/2" | 7" | 22 | 1945.00 |

### Model M2 Polypropylene (P) Pumps, Including Models with Teflon Diaphragms

|                              |  |             |       |    |     |         |         |    |        |
|------------------------------|--|-------------|-------|----|-----|---------|---------|----|--------|
| M2/PO                        | Polypropylene<br>glass filled          | Brass/Steel | 1" 1" | 30 | 14" | 10 1/2" | 8 7/16" | 20 | 465.00 |
| M2/PT                        | (XPT)<br>Polypropylene<br>glass filled | Brass/Steel | 1" 1" | 25 | 14" | 10 1/2" | 8 7/16" | 20 | 645.00 |
| M-8<br>diaphragms<br>& balls | Neoprene<br>Buna-N<br>Nardel<br>Teflon |             |       |    |     |         |         |    |        |

\* Alloy Model Pumps are fitted with S.S. Manifold Nipples and Outer Piston Plates.

NA: Not available

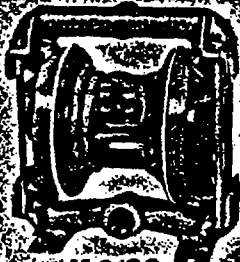
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MKIL189209

# WILDEN PUMP & ENGINEERING CO.

22069 VAN BUREN STREET, P.O. BOX 845, COLTON, CALIFORNIA 92324 / 714 783-082



M-2/00

## MODEL M-2

### WILDEN DIAPHRAGM PUMP

Factory Built  
Elastomer Options Available\*

(Suggested U.S. List Prices)



M-2/P

#### METALLIC PUMPS

| Factory Built Elastomer Options | Diaphragms | Valve Balls | Valve Seat O-Rings | Add      |
|---------------------------------|------------|-------------|--------------------|----------|
| M2/_/NE/NE/AL                   | Neoprene   | Neoprene    | Buna-N             | Standard |
| M2/_/NE/TF/_                    | Neoprene   | Teflon      | Buna-N             | \$24.00  |
| M2/_/BN/BN/_                    | Buna-N     | Buna-N      | Buna-N             | 25.00    |
| M2/_/BN/TF/_                    | Buna-N     | Teflon      | Buna-N             | 39.00    |
| M2/_/ND/ND/_                    | Nordel     | Nordel      | Nordel             | 35.00    |
| M2/_/ND/TF/_                    | Nordel     | Teflon      | Nordel             | 51.00    |

NOTE: Any combination of elastomers may be ordered; ask for price. Add \$30.00 to suggested list price for Teflon Valve Balls, and \$30.00 for 316 S.S. seats.

NOTE: Valve seat O-rings are of the same materials as pump diaphragm - except pumps with Neoprene diaphragms have Buna-N O-rings (908).

NOTE: Valve seats will be of the same material as the pump wetted parts.

#### POLYPROPYLENE PUMPS

| Factory Built Elastomer Options | Diaphragms | Valve Balls | Valve Seat O-Rings | Add      |
|---------------------------------|------------|-------------|--------------------|----------|
| M2/P/NE/NE/PN                   | Neoprene   | Neoprene    | Buna-N             | Standard |
| M2/P/NE/NE/PT                   | Neoprene   | Neoprene    | Teflon             | \$8.00   |
| M2/P/NE/TF/PT                   | Neoprene   | Teflon      | Teflon             | 32.00    |
| M2P/BN/BN/PN                    | Buna-N     | Buna-N      | Buna-N             | 27.00    |
| M2/P/ND/ND/PT                   | Nordel     | Nordel      | Teflon             | 47.00    |
| M2/P/ND/TF/PT                   | Nordel     | Teflon      | Teflon             | 57.00    |

\* Plastic pumps fitted with Neoprene or Buna-N diaphragms have Buna-N valve seat/manifold O-rings. Those with Nordel diaphragms have Teflon valve seat/manifold O-rings.

#### RETROFIT TEFLON CONVERSION KITS

(Includes Teflon diaphragms and balls, valve seat O-rings, back-up diaphragms, shaft, inner and outer pistons)

|                                 | P/N    | Price    |
|---------------------------------|--------|----------|
| Aluminum Models - Not Available |        |          |
| 316 Stainless Steel Models      | RSTF83 | \$380.00 |
| Hastelloy "C" Models            | RHTF83 | \$475.00 |

NOTE: Model M-2 pumps are shipped complete with muffler.

NOTE: Model M-2 pumps do not have a self-contained lubricator.

MKIL40209

#### MISCELLANEOUS OPTIONS

|  |      |         |
|--|------|---------|
| Muffler (70C)                                  | each | \$11.50 |
| Expanded Teflon Gasket Kit P/N TF2GK           | each | 25.00   |
| Orange Paint - 12 oz. Spray Can                | net  | 5.00    |
| Orange Catalog (for customer distribution)     | net  | 4.00    |
| Tannergas, T-190 In-Line Dispenser P/N TGT-190 | each | 180.00  |
| Freeze Bar, 1 quart container P/N TG-FB1QT     | each | 5.00    |
| Tannergas, 5 gallon container P/N TG-5GAL      | each | 60.00   |
| No-Tox, 5 gallon container P/N TG-NT5GAL       | each | 80.00   |
| Automatic Powder Valve P/N APV                 | each | 84.00   |

RSB - P - 1

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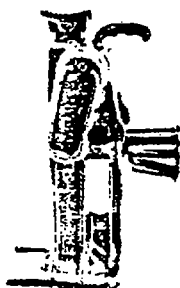
# DUFF-NORTON RATCHET JACKS

CHEM OP 10.20 Exhibit 4  
9/15/85 9/15/85

## Outstanding Features

Exclusive, patented spring mechanism is a one-piece, self-contained unit. It can be adjusted, repaired or replaced easily, without dismantling jack. Load is raised or lowered one notch at a time—down stroke for raising and up stroke for lowering.

Jacks cannot be tripped when under load. Rack bars can be pulled up by hand to meet the load. Covers are recessed in housing, to protect lifting mechanisms. Fulcrum centers are located for utmost speed and ease of lifting.



514-MT  
516-MT  
521-MT

**5 TONS**—Single-acting, ratchet-lowering with foot lift. Furnished with high-strength heat-treated, double round sockets and steel operating lever 1" x 30". When jack is not under load, head can be dropped or tripped instantly.

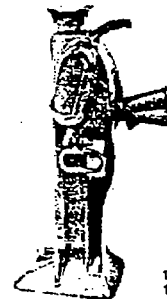
**USES**—For moving, lifting and bracing lighter loads of all kinds. Because rack bar can be dropped after load is removed—a time-saving feature—this jack is popular for rerailing mine cars and locomotives.



1022-A

**10 TONS**—Aluminum single-acting, ratchet-lowering, with foot lift. Furnished with double round sockets and steel operating lever 1 1/4" x 60".

**USES**—For moving and repairing all types of machinery, road building equipment, streetcar trucks, bolsters and couplings on freight cars; and for erecting drilling rigs, beams, concrete forms, shoring.



1522  
1528  
2028

**15 TONS**—Single-acting, ratchet-lowering, with foot lift. Double round sockets and steel lever bar are standard.

**USES**—For industrial plants, mills, mines, contractors, railroads, riggers, truckers, public utilities, machine shops. A heavy-duty all-purpose jack for lifting, lowering, holding, and moving all kinds of loads.

**20 TONS**—Single-acting, ratchet-lowering, with foot lift, double round sockets and steel lever 1 1/4" x 60".

**USES**—The heaviest, strongest, most powerful Duff-Norton ratchet lowering jack. Ideal for the most difficult lifting, holding, moving and lowering jobs in mills, mines, railroads, public utilities plants and contractor operations.

## JACK SPECIFICATIONS Ratchet Jacks

| Product Code        | 00203         | 00205         | 00207         | 00209           | 00211         | 00213         | 00215            |
|---------------------|---------------|---------------|---------------|-----------------|---------------|---------------|------------------|
| Jack No.            | 514 MT        | 516 MT        | 521 MT        | 1022-A          | 1522          | 1528          | 2028             |
| Capacity Tons       | 5             | 5             | 5             | 10 TOP<br>5 TOE | 15 TOP*       | 15 TOE        | 20 TOP<br>10 TOE |
| Height Inches       | 14            | 16            | 21            | 22              | 22            | 28            | 28               |
| Base Inches         | 7 1/2         | 9 1/2         | 14 1/2        | 12 1/2          | 11 1/2        | 17 1/2        | 18               |
| Base Inches         | 5 1/2 x 7 1/2 | 5 1/2 x 7 1/2 | 5 1/2 x 7 1/2 | 7 x 10 1/2      | 8 x 11        | 8 x 11        | 8 x 11           |
| Head Inches         | 2 1/2 x 2 1/2 | 2 1/2 x 2 1/2 | 2 1/2 x 2 1/2 | 3 x 3           | 3 x 3 1/2     | 3 x 3 1/2     | 3 x 3 1/2        |
| Foot Lift H. Inches | 11            | 15            | 15            | 2 1/2           | 2 1/2         | 2 1/2         | 2 1/2            |
| Weight Pounds       | 16            | 41            | 47            | 65              | 100           | 117           | 126              |
| Rack Size           | 1 1/2 x 1 1/2 | 1 1/2 x 1 1/2 | 1 1/2 x 1 1/2 | 1 1/2 x 1 1/2   | 1 1/2 x 1 1/2 | 1 1/2 x 1 1/2 | 1 1/2 x 1 1/2    |

Curved tops are now standard

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## Also from Duff-Norton: RAM-PAC® HYDRAULIC EQUIPMENT FOR PRODUCTION AND MAINTENANCE JOBS.

Duff-Norton offers a complete line of hydraulic rams, pumps, and accessory equipment for a wide range of industrial applications.

**Single-Acting Rams**—In 19 models with rated capacities from 5 to 100 tons. Designed for maximum travel in relation to closed height. Of high-strength materials, with fewer working parts for less maintenance.

**Double-Acting Rams**—Nine models, rated 10 to 100 tons capacity. Provide more travel than other rams with same closed height. Retract under hydraulic power for pulling.

**Center-Hole Rams**—Four sizes, rated 10 to 60 tons. Hollow piston holds rods, cables and other accessories; convertible with use of optional piston saddles. In single-acting and double-acting types.

**Pumps**—Manual pumps, and electric, air or gasoline-engine powered models to meet every ram arrangement and operating condition.

**Complete Ram-Pac Units**—In 32 models, from 5 to 100 tons. Provide a portable, remotely controlled power source consisting of ram, hand pump, hose and couplings.

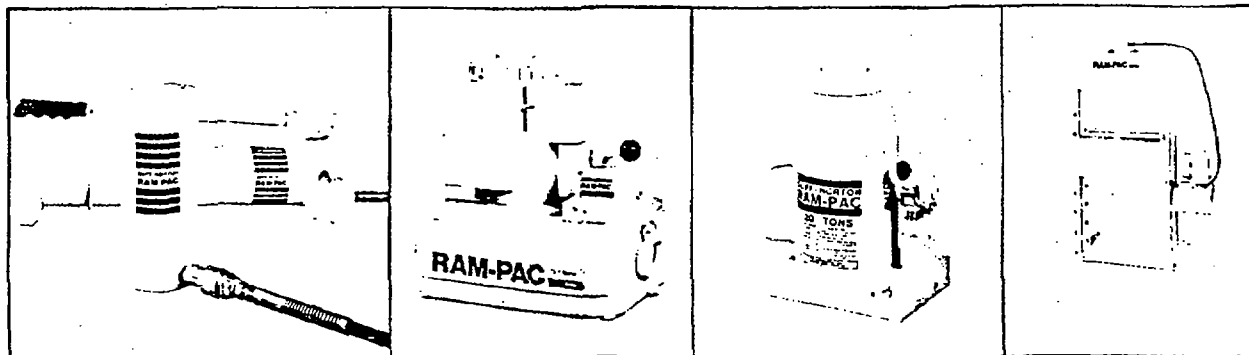
**Complete Maintenance Kits**—Rated 4, 10 or 20 tons capacity, each kit consists of a ram, pump, hose, couplings and accessories for a variety of maintenance jobs. Includes heavy-duty storage box.

**Integral Ram-Pac Units**—Combine ram and pump in one compact package. Easy to transport, simple to use. In 14 models, rated 1½ to 100 tons lifting capacity.

**Hydraulic Press Frames**—In 21 heavy-duty models rated 10, 30 and 50 tons. Rigid structural steel frame permits loading from both sides. Unique lifting mechanism moves bed smoothly from maximum to minimum throat. Can be supplied with manual, air or electric pump.

A wide range of accessories and attachments permit assembly of systems for lifting, pushing, spreading, bending, clamping, straightening, and other production and maintenance jobs.

For further information, see your local Duff-Norton Distributor or write for free Ram-Pac Catalog 176.



**WARNING:** The equipment shown in this catalog is intended for industrial use only and should not be used to lift, support, or otherwise transport human cargo.

AVAILABLE FROM YOUR LOCAL LIFTING PRO:

Duff-Norton Company, P.O. Box 32605  
Charlotte, North Carolina 28232  
(704) 588-0300 Telex: 575188

The Canadian Duff-Norton Company, Ltd., 15 Lockport Avenue,  
Toronto, Ontario M8Z 2R6 (416) 239-3525 Telex: 06967601

Branch Offices:

1278 West Ninth Street, Cleveland, Ohio 44113  
(216) 781-4232 Telex: 980187

801 Pratt Boulevard, Elk Grove Village (Chicago), Illinois 60007  
(312) 439-8866 Telex: 253765

480 Coney Island Drive, Sparks (Reno), Nevada 89431  
(702) 331-1111 Telex: 354457

**CMHI**  
THE CANADIAN MATERIAL HANDLING INSTITUTE INC.  
MEMBER COMPANY

**MKIL40211**

Catalog 207  
Printed in U.S.A.  
10/81/189/000

MK094622

**MKIL189212**



## Hose Handling Slings

Lift-All Hose Handling Slings are designed for OS&D operations and should be used in choker hitch only. These slings will support hose, distributing the load evenly, thus minimizing kinking and cutting. If used for other than OS&D work, please contact Lift-All for additional information. Nylon construction unless other material is specified.

CHEM OP 10.20 Exhibit 5  
9/15/85 9/15/85

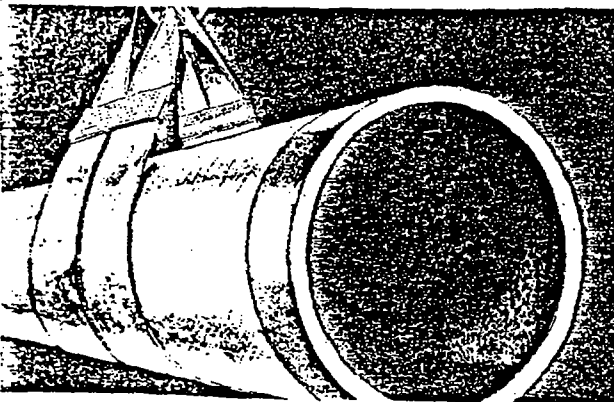
### Specifications

| Hose Diameter | Body Web Width | Sling Length | Choker Capacity in Lbs. | List Price |
|---------------|----------------|--------------|-------------------------|------------|
| 4"            | 4"             | 3' - 6"      | 3,000                   | \$ 30.40   |
| 6"            | 6"             | 4' - 0"      | 4,000                   | 35.45      |
| 6"            | 6"             | 4' - 6"      | 4,000                   | 36.60      |
| 8"            | 8"             | 6' - 0"      | 5,000                   | 62.20      |
| 10"           | 10"            | 9' - 0"      | 6,000                   | 96.90      |
| 12"           | 12"            | 11' - 0"     | 7,000                   | 121.40     |

## Wide-Lift Slings

### CONTINUOUS EYE WIDE-LIFT

All Wide-Lift Slings are basket hitch slings that distribute the load over a wide area and give good balance to extra large and heavy loads. They are constructed from an endless sling with the two length stitched side by side.



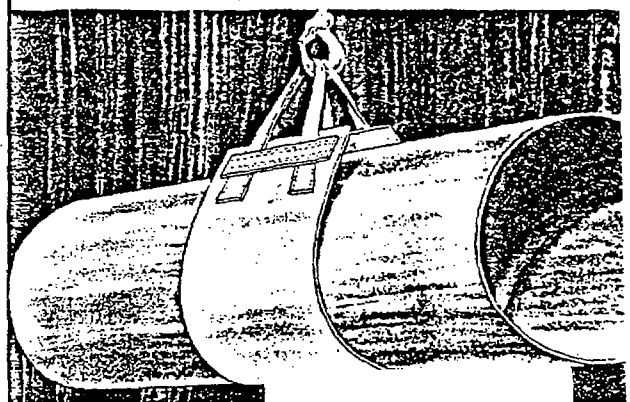
### Specifications

| Sling Width | Code Number | Basket Hitch Capacity in Lbs. | Base Price 3' lg. Sling | Add per Foot |
|-------------|-------------|-------------------------------|-------------------------|--------------|
| 6"          | WL1-806     | 15,400                        | \$ 35.10                | \$ 6.05      |
| 6"          | WL2-806     | 28,600                        | 57.90                   | 10.10        |
| 8"          | WL1-808     | 20,400                        | 43.30                   | 7.30         |
| 8"          | WL2-808     | 38,000                        | 71.40                   | 12.60        |
| 10"         | WL1-810     | 25,600                        | 54.35                   | 8.90         |
| 10"         | WL2-810     | 47,600                        | 89.65                   | 15.20        |
| 12"         | WL1-812     | 30,800                        | 74.90                   | 10.80        |
| 12"         | WL2-812     | 57,200                        | 123.65                  | 18.45        |
| 16"         | WL1-816     | 38,000                        | 101.50                  | 15.75        |
| 16"         | WL2-816     | 61,500                        | 167.40                  | 29.00        |
| 20"         | WL1-820     | 45,000                        | 128.55                  | 20.05        |
| 20"         | WL2-820     | 63,000                        | 212.15                  | 37.65        |
| 24"         | WL1-824     | 52,000                        | 160.70                  | 24.25        |
| 24"         | WL2-824     | 70,000                        | 264.90                  | 46.75        |

Note: Normal eye length is 1 1/2 times body width.

### ATTACHED EYE WIDE-LIFT

Attached-Eye Wide-Lift Slings are to be used in basket hitch with light loads and wide bearing areas. The eyes are made from separate material to accommodate small crane hooks.



### MKIL40212

| Sling Width | Code Number | Basket Hitch Capacity in Lbs. | Base Price 3' lg. Sling | Add per Foot |
|-------------|-------------|-------------------------------|-------------------------|--------------|
| 6"          | WLA1-806    | 3,000                         | \$ 29.70                | \$ 6.05      |
| 6"          | WLA2-806    | 6,000                         | 32.65                   | 6.05         |
| 8"          | WLA1-808    | 3,000                         | 35.50                   | 7.30         |
| 8"          | WLA2-808    | 6,000                         | 38.40                   | 7.30         |
| 10"         | WLA1-810    | 3,000                         | 42.90                   | 8.90         |
| 10"         | WLA2-810    | 6,000                         | 45.80                   | 8.90         |
| 12"         | WLA1-812    | 3,000                         | 56.20                   | 10.80        |
| 12"         | WLA2-812    | 6,000                         | 59.10                   | 10.80        |
| 16"         | WLA1-816    | 5,000                         | 75.10                   | 15.75        |
| 16"         | WLA2-816    | 10,000                        | 79.35                   | 15.75        |
| 20"         | WLA1-820    | 5,000                         | 92.50                   | 20.05        |
| 20"         | WLA2-820    | 10,000                        | 96.80                   | 20.05        |
| 24"         | WLA1-824    | 5,000                         | 112.50                  | 24.30        |
| 24"         | WLA2-824    | 10,000                        | 116.80                  | 24.30        |

CAUTION: DO NOT EXCEED RATED CAPACITIES

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## YOUR LIFT-ALL SLING DISTRIBUTOR IS A PRO.

Our sling distributors are well qualified to help you with your selection and application. Many Lift-All nylon and polyester web slings — excepting specially designed types and wire mesh slings — are often available off the shelf through your local sling distributor. For prompt sling information, sales and service, contact the Lift-All distributor, see the Yellow Pages or write us for his name.



**Lift-All**  
PRODUCTS FOR BETTER LIFTING

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PHONE (717) 665-6821



Specify Lift-All slings for all your lifting needs. If it's not in our catalog we'll make it to your specifications.

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WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE ABOVE OBLIGATION ARE HEREBY DISCLAIMED BY SELLER AND EXCLUDED. Seller will not be liable for any consequential damages, loss or expense arising in connection with the use or inability whatever, regardless of whether damage, loss, or expense results from any act or failure to act by Seller, whether negligent or willful, or from any other reason.

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**McKesson**  
Operations

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.21      | 1              |     |
| Subject   | Issue Date | Effective Date |     |
| EMERGENCY PRESS RELATIONS POLICY -<br>FIELD LOCATIONS | 9/15/85    | 9/15/85        |     |

**PURPOSE** To establish a policy and procedure for handling emergency press relations at field locations.

**BACKGROUND** The possibility of serious accidents, acts of God, disasters, fires or other injury or death-causing incidents or those involving substantial material loss must be considered. Whenever these situations occur, there is a distinct likelihood of an inquiry or personal visit by media representatives. It is important to follow a proper procedural sequence so that Home Office Chemical may marshal the proper Corporate resources should they be needed.

**ACTION** In the event of an emergency such as described, the following procedures apply:

1. If the accident occurs away from the work location, the Emergency Coordinator or alternate should be notified as soon as the situation allows. If the accident occurs at the work location, the Emergency Coordinator or alternate will be in charge and assume the responsibilities of handling emergency press relations following the guidelines below.
2. The Emergency Coordinator is responsible for promptly advising Home Office Chemical, Area and Regional offices, as well as proper governmental agencies.
3. Home Office Chemical will, in turn, advise and solicit advice from Corporate Public Relations regarding the incident.
4. Listed below are day numbers and night numbers for initial contact with Home Office Chemical. The first name should be called first. In his absence, call in descending order. One should be available for the emergency notification:

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**McKesson**  
**Operations**

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.21      | 2              |     |
| Subject   | Issue Date | Effective Date |     |
| EMERGENCY PRESS RELATIONS POLICY -<br>FIELD LOCATIONS | 9/15/85    | 9/15/85        |     |

**ACTION**  
**(Cont.)**

**MCC**

|                            |              |              |
|----------------------------|--------------|--------------|
| Dick A. Davis              | 415-983-9019 | 415-547-3040 |
| Morrison A. Minor          | 415-983-8642 | 415-775-0783 |
| Barry B. Blocker           | 415-983-8342 | 415-851-0102 |
| George E. Constantino, Jr. | 415-983-8581 | 415-254-2941 |
| Jon W. d'Alessio           | 415-983-8677 | 415-454-8608 |

**MEC**

|                            |              |              |
|----------------------------|--------------|--------------|
| Dave J. Schoonmaker        | 415-983-8343 | 415-254-7560 |
| Barry B. Blocker           | 415-983-8342 | 415-851-0102 |
| George E. Constantino, Jr. | 415-983-8581 | 415-254-2941 |
| Jon W. d'Alessio           | 415-938-8677 | 415-454-8608 |

**MES**

|                            |              |              |
|----------------------------|--------------|--------------|
| George N. Butter           | 415-828-1446 | 415-548-1845 |
| M. Dale Sands              | 415-828-1446 | 415-484-1286 |
| Barry B. Blocker           | 415-983-8342 | 415-851-0102 |
| George E. Constantino, Jr. | 415-983-8581 | 415-254-2941 |
| Jon W. d'Alessio           | 415-983-8677 | 415-454-8608 |

- To avoid the possible spread of misinformation and false rumors by employees, as well as recognizing that enterprising reporters will seek out information regarding an emergency from employees, it will be the responsibility of the Emergency Coordinator to brief the employees utilizing the guidelines given below.

**PREPARATION**

Home office contacts will provide initial counsel and assistance as the situation dictates. To facilitate the flow of factual information, a caller should be prepared to render the following.

WHO - is (was) involved  
WHAT - took place  
WHERE - location  
WHEN - date/time (time zone of occurrence)

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**McKesson**  
Operations

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.21      | 3              |     |
| Subject   | Issue Date | Effective Date |     |
| EMERGENCY PRESS RELATIONS POLICY -<br>FIELD LOCATIONS | 9/15/85    | 9/15/85        |     |

RESPONSE  
GUIDELINES

If circumstances prevail that the Emergency Coordinator or alternate does not have access or contact with the Home Office numbers provided, it then becomes that person's responsibility to take the initiative in handling emergency press relations appropriately and in accordance with the following general guidelines:

1. If the emergency involves local fire, police, or hospital authorities and is likely to be reported in the press, it is usually to the advantage of the Company to give the press a brief statement of the facts without waiting to be asked in order to prevent rumor and distortion of the facts. (A possible exception to this: in the case of a bomb scare where no explosion resulted, the spokesperson should not initiate press contact, but should be prepared to respond in the event of press inquiry.)
2. Spokespersons are cautioned not to speculate or give opinions on cause, cost, or other information relating to an emergency. Stick strictly to the facts that can be disclosed. Avoid providing any comment that could be construed to be an accusation, the fixing of blame, or a liability on the Company, its employees, or upon outsiders involved in the incident.
3. In times of disaster, reporters and photographers desiring admittance to a company facility should be escorted to an administrative area and provided a place to work and make telephone calls. Media and camera crews may be escorted to the damaged area as soon as public safety officials say it is safe to do so. However, persons allowed on Company property should be escorted at all times while on the premises outside the administrative area. Pre-select an administrative area in advance of an incident.

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**McKesson**  
**Operations**

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.21      | 4              |     |
| Subject   | Issue Date | Effective Date |     |
| EMERGENCY PRESS RELATIONS POLICY -<br>FIELD LOCATIONS | 9/15/85    | 9/15/85        |     |

RESPONSE  
GUIDELINES  
(Cont.)

4. Allow news and TV photographers to take pictures unless it violates security. Do not try to interfere with the taking of photographs from outside the Company property, since there is no legal right to do so.
5. If reporters cannot get the straight facts from you, they can get at least some of them readily (but second hand) from the police, the coroner, hospitals, and the fire department -- agencies they readily contact. If reporters have to try to pry "facts" from some bystander who more than likely doesn't know of the facts (but is usually delighted to talk anyway), the story could be highly colored and inaccurate. Hence it could do you and the Company much harm.
6. The wrong answer, or a too-hasty, curt, evasive, or off-the-cuff answer, could do harm to the Company and its good reputation with the public. Hence, it is highly advisable to prepare factual data for media inquiry. This does not imply "editorializing" anyone's personal slanting of straight facts.
7. No answer at all, or a blunt "no comment" is often the worst possible response. There is a general impression that behind the statement "no comment" hide the guilty, the frightened, or the intimidated. Of course, it's possible that a local manager cannot comment for publication on the matter in question, for any valid reason. If so, the issue becomes judgemental. Examples of alternatives to "no comment" are: "I can't provide you with an answer to that question at this time because I do not have all the facts"...or, "I can't comment on that because there are legal considerations"... or, "I don't feel that I'm qualified to make a comment on that, but I will try to get a comment from someone who is qualified."

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**McKesson**  
**Operations**

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.21      | 5              | X   |
| Subject   | Issue Date | Effective Date |     |
| EMERGENCY PRESS RELATIONS POLICY -<br>FIELD LOCATIONS | 9/15/85    | 9/15/85        |     |

RESPONSE  
GUIDELINES  
(Cont.)

What about "Off the record?" Reporters are looking for news, not confidences. For this reason, some reporters refuse to listen to "off the record" comments. It is advisable to stay "on the record" and consider anything you say accordingly.

8. Experienced reporters know that occasionally there are developments which must be kept confidential for a time. If you are in that kind of situation, explain fully and clearly the reason why the answer cannot be given, and assure reporters that as soon as it can be given for publication, you will call them.

For those relatively few questions which may involve matters of company or customer policy or confidential information of value to our competitors, explain why you cannot answer the question. Usually merely stating that the reasons are of Company or customer policy or are confidential and of value to competitors is sufficient.

9. If reporters want to quote you by name, there's usually no reason why they should not do so. But, if you'd rather not be quoted personally, they will generally go along with your request to remain anonymous as a "company spokesperson."

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**McKesson**  
**Operations**

| Section                               | Reference  | Page           | End |
|---------------------------------------|------------|----------------|-----|
| GENERAL SAFETY                        | 10.22      | 1              |     |
| Subject                               | Issue Date | Effective Date |     |
| CHEMICAL CARGO EMERGENCIES - CHEMTREC | 10/15/86   | 10/15/86       |     |

**PURPOSE**

It is McKesson's intent to take first responsibility for its chemical cargo emergencies whenever possible, using additional assistance as required. The goal is fast response in order to keep our products inside their containers.

This section will describe CHEMTREC and McKesson's participation in it.

**CARGO TANK  
EMERGENCIES**

There are two types of chemical cargo emergencies:

Type I - occur on McKesson trucks and transports.

Type II - involve shipments handled by common or outside carriers.

Type I Procedure - The driver calls the Service Center or asks someone to do so. If the emergency occurs after hours, and Service Center personnel cannot be located at home, the driver contacts CHEMTREC (800-424-9300) and states the essentials of the problem.

Each truck should carry a CHEMTREC decal (p.7) on the dash and/or left-hand door, and the Service Center telephone number. These are for the convenience of the driver and others, if the driver is incapacitated.

Type II Procedure - To facilitate emergency response, the carrier's copy of each Bill of Lading should bear a stamp with the following:

"In case of an emergency, phone (Service Center number).

If no response, call CHEMTREC, 800-424-9300."

**CALL  
LIST**

When CHEMTREC is called in an emergency which may involve McKesson, they will notify one of the persons on the contact list we provide them. This list, organized by Region, is composed primarily of Service Center Operations, Area Operations, Regional Operations and Home Office Operations personnel.

**MKIL40219**

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## McKesson Operations

| Section                               | Reference  | Page           | End |
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| GENERAL SAFETY                        | 10.22      | 2              |     |
| Subject                               | Issue Date | Effective Date |     |
| CHEMICAL CARGO EMERGENCIES - CHEMTREC | 10/15/86   | 10/15/86       |     |

### CALL LIST

Changes in phone numbers and contacts should be directed to Home Office Operations which maintains this list and transmits it to Service Centers and CHEMTREC.

A Service Center may be contacted by CHEMTREC because it is the McKesson facility nearest to the site of an emergency, although it may not be the shipper or receiver. The Service Center is still responsible for taking appropriate action as the McKesson representative.

### CHEMTREC - WHAT IT IS

CHEMTREC (Chemical Transportation Emergency Center) is a public service of the Chemical Manufacturers Association, Washington, D.C. It provides immediate advice for those at the scene of chemical emergencies. It then promptly contacts the shipper who provides more detailed assistance and appropriate follow-up. Since 1986, CHEMTREC also handles information for non-transportation emergencies.

CHEMTREC operates 24 hours a day, and may be reached toll-free at 1-800-424-9300.

### WHAT IT IS NOT

CHEMTREC is not intended and is not equipped to function as a general chemical information source, but is confined to providing communications and initial emergency response information in chemical emergencies. Drivers should not call CHEMTREC on problems of any other nature.

### MODE OF OPERATION

An emergency reported to CHEMTREC is received by the Communicator on duty, who records details in writing and by tape recorder. The Communicator attempts to determine the essentials of the problem such as:

- Name of caller and call back number
- Name of product
- Nature of problem
- Location of problem
- Shipper or manufacturer
- Container, type and quantity
- Railcar or truck number
- Carrier name
- Consignee

- Local conditions, i.e., weather, temperature, wind, population, terrain, airport location.

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**McKesson**  
**Operations**

| Section                               | Reference  | Page           | End |
|---------------------------------------|------------|----------------|-----|
| GENERAL SAFETY                        | 10.22      | 3              | X   |
| Subject                               | Issue Date | Effective Date |     |
| CHEMICAL CARGO EMERGENCIES - CHEMTREC | 10/15/86   | 10/15/86       |     |

MODE OF  
OPERATION  
(Cont.)

Having advised the caller, the Communicator proceeds immediately to notify the shipper or chemical suppliers by phone about the known facts of the emergency.

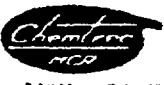
Identification of product and shipper is important. Shipping papers are carried by truck drivers, and in engine or caboose of trains. Car and truck numbers and carrier names can be useful in tracing unknown cargoes.

CHEMTREC is a communication link which permits access to the Emergency Responders of shippers, suppliers, CHLOREP or the Pesticide Safety Team Network of NACA.

CHEMTREC stickers are available directly from Home Office Operations in the following sizes:

Size #1 - 1" x 4"

**FOR HELP IN CHEMICAL EMERGENCIES**  
Involving SPILL, LEAK, FIRE or EXPOSURE  
**PHONE**  
Toll-Free • Day or Night  
**\*800—424-9300** Form No. 314-086-77



\* Add long-distance access number if required

These can be used on dashboards of trucks, on clipboards, on or near telephones, etc.

Size #2 - 2" x 8"

To be posted on the inside of the truck door in a place where it may be read by someone on the ground.

Size #3 - 4" x 16"

These are designed primarily for trailers and buildings. Approval should be obtained from Area Operations before using on buildings.

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**McKesson**  
**Operations**

| Section                               | Reference  | Page           | End |
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| GENERAL SAFETY                        | 10.22      | 5              |     |
| Subject                               | Issue Date | Effective Date |     |
| CHEMICAL CARGO EMERGENCIES - CHEMTREC | 9/15/85    | 9/15/85        |     |

WHAT IT  
IS NOT

Because chemicals have such a wide range of uses and characteristics, persons working with them often have many questions regarding composition and purity, physical and chemical properties, effects on people and the environment, sources of supply, etc. It is important to understand, however, that CHEMTREC is not intended and is not equipped to function as a general chemical information source, but by design is confined to dealing with chemical transportation emergencies. Drivers should not call CHEMTREC on problems of any other nature.

MODE OF  
OPERATION

CHEMTREC's purpose and WATS number have been widely circulated in professional literature distributed to emergency service personnel, carriers, and the chemical industry, and have been further circulated in bulletins of governmental agencies, trade associations, etc.

Shipping documents of participating companies are requested to include the following: "For help in chemical emergencies involving spill, leak, fire or exposure, call toll-free 800-424-9300 day or night."

An emergency reported to CHEMTREC is received by the Communicator on duty, who records details in writing and by tape recorder. The Communicator attempts to determine the essentials of the problem such as:

- Name of caller and call back number
- Name of product
- Nature of problem
- Location of problem
- Shipper or manufacturer
- Container, type and quantity
- Railcar or truck number
- Carrier name
- Consignee
- Local conditions, i.e., weather, temperature, wind, population, terrain, airport location.

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**McKesson**  
**Operations**

| Section                               | Reference  | Page           | End |
|---------------------------------------|------------|----------------|-----|
| GENERAL SAFETY                        | 10.22      | 6              |     |
| Subject                               | Issue Date | Effective Date |     |
| CHEMICAL CARGO EMERGENCIES - CHEMTREC | 9/15/85    | 9/15/85        |     |

MODE OF  
OPERATION  
(Cont.)

This is to enable him to provide the best available information on the chemical(s) reported to be involved and give specific indication of the hazards and appropriate action. Information on various chemicals, as furnished by manufacturers, is within his easy reach. Trade names and synonyms of chemical names are cross-referenced for ready identification.

CHEMTREC's Communicators are not scientists. They are chosen for their ability to remain calm under emergency stress. To preclude unfounded personal speculation regarding a reported emergency, they are under instructions to abide strictly by the information prepared by technical experts for their use.

Having advised the caller, the Communicator proceeds immediately to notify the shipper by phone. The known particulars of the emergency thus relayed, responsibility for further guidance -- including dispatching personnel to the scene or whatever action seems warranted -- passes to the shipper.

Identification of product and shipper is important. Shipping papers are carried by truck drivers, and in engine or caboose of trains. Car and truck numbers and carrier names can be useful in tracing unknown cargoes.

Mutual aid programs exist for some products, whereby one producer will service field emergencies involving another manufacturer's product. In such cases, initial referral may be in accord with the applicable mutual aid plan rather than direct to the shipper. Arrangements of this sort are established on chlorine through the Chlorine Institute and on pesticides through the National Agricultural Chemicals Association.

The former has CHLOREP, the Chlorine Emergency Plan, in which the nearest producer or repackager responds to a problem. NACA has a Pesticide Safety Team Network of some 40 emergency teams distributed throughout the country. CHEMTREC serves as the communication link for both programs.

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## **McKesson** Operations

| Section                               | Reference  | Page           | End |
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| GENERAL SAFETY                        | 10.22      | 7              | X   |
| Subject                               | Issue Date | Effective Date |     |
| CHEMICAL CARGO EMERGENCIES - CHEMTREC | 9/15/85    | 9/15/85        |     |


### MODE OF OPERATION (Cont.)

Many individual companies have well organized response capabilities for their own products, some of which preceded CHEMTREC by several years (such as our own emergency response team). CHEMTREC does not seek to displace these, but rather collaborates with them and enhances their effectiveness. CHEMTREC's single telephone number affords this opportunity.

CHEMTREC stickers are available directly from Home Office Operations in the following sizes:

Size #1 - 1" x 4"

FOR HELP IN CHEMICAL EMERGENCIES  
Involving SPILL, LEAK, FIRE or EXPOSURE  
**PHONE**  
Toll-Free • Day or Night  
**\*800—424-9300** Form No. 314-005-77



\* Add long-distance access number if required

These can be used on dashboards of trucks, on clipboards, on or near telephones, etc.

Size #2 - 2" x 8"

To be posted on the inside of the truck door in a place where it may be read by someone on the ground.

Size #3 - 4" x 16"

These are designed primarily for trailers and buildings. Approval should be obtained from Area Operations before using on buildings.

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| Section  | Reference  | Page           | End |
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| GENERAL SAFETY   | 10.30      | 1              |     |
| Subject  | Issue Date | Effective Date |     |
| INDEX TO ACCIDENT & INSURANCE<br>CLAIMS REPORTING REQUIREMENTS | 9/15/85    | 9/15/85        |     |

|   | Reports Required  | Manual References <sup>1</sup>   |
|---|---|--|
| EMPLOYEE<br>INJURY  | <ol style="list-style-type: none"> <li>1. Accident Prevention Investigation (RM 100)</li> <li>2. Loss Time Accident Report (if applicable)</li> <li>3. Workers' Compensation (if medical expenses are incurred)</li> <li>4. OSHA Log (No. 200) &amp; Supplementary Record (No. 101)</li> </ol>                  | <ol style="list-style-type: none"> <li>1. Chem Op 10.31</li> <li>2. Chem Op 10.31</li> <li>3. Corp RIM 55.10 through 55.60; 70.60 &amp; 70.61</li> <li>4. Chem Op 10.56</li> </ol>                     |
| VEHICLE<br>DAMAGE<br>(PASSENGER<br>CAR OR<br>DELIVERY<br>VEHICLE) | <ol style="list-style-type: none"> <li>1. Accident Prevention Investigation (RM 100)</li> <li>2. Property Loss (GA 443)</li> <li>3. Liability Accident Notice Auto (CLM 221)</li> <li>4. DOT Hazardous Materials Incident Report (F 5800.1)</li> <li>5. DOT Motor Carrier Accident Report (MCS 50-T)</li> </ol> | <ol style="list-style-type: none"> <li>1. Chem Op 10.31</li> <li>2. Corp RIM 10.40 &amp; 40.10</li> <li>3. Corp RIM 10.10, 10.20, 10.30</li> <li>4. Chem Op 30.60</li> <li>5. Chem Op 30.61</li> </ol> |

<sup>1</sup> Chem Op and Corp RIM are the Chemical Operations manual and the Corporate Risk & Insurance Management manual, respectively; the numbers are the sections in which the reporting and forms distribution procedures are described.

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**McKesson**  
**Operations**

|         |  |                          |                              |          |
|---------|--|--------------------------|------------------------------|----------|
| Section | GENERAL SAFETY   | Reference<br>10.30       | Page<br>2                    | End<br>X |
| Subject | INDEX TO ACCIDENT & INSURANCE<br>CLAIMS REPORTING REQUIREMENTS | Issue<br>Date<br>9/15/85 | Effective<br>Date<br>9/15/85 |          |

|  | <u>Reports Required</u>  | <u>Manual References<sup>1</sup></u>  |
|--|--|---|
| DAMAGE TO<br>McKESSON<br>PROPERTY                | <ol style="list-style-type: none"> <li>1. Accident Prevention Investigation (RM 100)</li> <li>2. Property Loss (GA 443)</li> </ol>                       | <ol style="list-style-type: none"> <li>1. Chem Op 10.31</li> <li>2. Corp RIM 10.40 &amp; 40.10</li> </ol> |
| DAMAGE TO<br>OTHERS<br>(INJURY OR<br>PROPERTY)   | <ol style="list-style-type: none"> <li>1. Accident Prevention Investigation (RM 100)</li> <li>2. Liability Accident Notice Non-Auto (CLM 220)</li> </ol> | <ol style="list-style-type: none"> <li>1. Chem Op 10.31</li> <li>2. Corp RIM 20.10</li> </ol>             |
| POTENTIAL<br>FOR INJURY<br>OR PROPERTY<br>DAMAGE | <ol style="list-style-type: none"> <li>1. Unusual Incident Report</li> </ol>   | <ol style="list-style-type: none"> <li>1. Chem Op 10.31</li> </ol>  |

In addition to the above reports, a quarterly accident information summary is to be submitted to the Home Office Operations Analyst (Chem Op 10.31).

<sup>1</sup> Chem Op and Corp RIM are the Chemical Operations manual and the Corporate Risk & Insurance Management manual, respectively; the numbers are the sections in which the reporting and forms distribution procedures are described.

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**McKesson**  
**Operations**

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.31      | 1              |     |
| Subject   | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>INDUSTRIAL ACCIDENTS | 9/15/85    | 9/15/85        |     |

**GENERAL**

Accidents must be reported and investigated as close to the time of occurrence as possible. In any case, the employee's statement should be made within 24 hours and the supervisor's report within 48 hours. If an accident resulted in death or serious injury to the employee, the report must be made within 24 hours.

The purposes of accident investigation are to:

1. Analyze each accident and determine its cause.
2. Prevent accidents through training of employees to eliminate unsafe practices and to be prepared to allow for mistakes, carelessness, and thoughtless actions of other employees.

All accidents are to be investigated in order to determine:

1. How was the injury or damage incurred -- exactly what happened and where?
2.
  - a. Under what accompanying or special circumstances did the accident occur? In other words, why?
  - b. Find all the contributing factors.
  - c. Effective investigation is, first of all, a fact finding job which requires, among other things, personal sincerity and honesty. Facts as they are found should be met and acknowledged face to face. An investigation should not be looked upon as a necessary evil but rather in its true light which is the opportunity to bring about better control of dangerous operating conditions.
  - d. Accident investigations must be thorough. Nothing can be assumed or taken for granted. Every alleged fact must be challenged until it is known exactly what happened which means, "Who did or did not do something and why?"

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**McKesson**  
**Operations**

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| GENERAL SAFETY  | 10.31      | 2              |     |
| Subject   | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>INDUSTRIAL ACCIDENTS | 9/15/85    | 9/15/85        |     |

GENERAL  
(Cont.)

3. After the details surrounding the occurrence of the accident have been reconstructed, then proceed to determine what should be done to eliminate or control the hazard or hazards that caused the accident.

HOW TO  
INVESTIGATE  
ACCIDENTS

1. The invariable cause of an accident is that someone did something that he should not have done or that someone failed to do something that he should have done. Do not be confused by such words as "machine failure," "man failure," and "unsafe physical conditions." Behind all these phrases is an unsafe act or failure to act on the part of somebody.
2. Obtain all the preliminary information regarding the accident, the person injured and the injury itself.  
  
For instance, information may be needed regarding similar accidents that happened in the past; study the personnel and accident record of the person injured to obtain these facts.
3. An Accident Prevention Investigation Report, Form RM-100, (see Ref. 10.32, Exhibit 1)<sup>1</sup> will be completed on every accident by the Safety Coordinator or immediate supervisor of the injured employee. It is the responsibility of the Service Center Manager to see that constructive, effective action is taken toward reducing or eliminating the possibility of a recurrence. These reports should be maintained in a file folder. (Supplies of Form RM-100 are available from Forms Management.)

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<sup>1</sup> The report form is the same for both industrial and vehicle accidents.

| Section   | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY  | 10.31      | 3              | X   |
| Subject   | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>INDUSTRIAL ACCIDENTS | 9/15/85    | 9/15/85        |     |

HOW TO  
INVESTIGATE  
ACCIDENTS  
(Cont.)

4. Interview witnesses and discuss with the injured person, when available, the details regarding the occurrence of the accident, and obtain his recommendations for correcting the hazard which caused his injuries. He may know more and have better answers than anyone else.

Home Insurance and ESIS representatives will review the reports during their periodic visits and will discuss with Service Center executives ways of keeping industrial accidents at a minimum. These files must also be available for review by Department of Transportation and OSHA inspectors.

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**McKesson**  
**Operations**

| Section  | Reference  | Page           | End |
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| GENERAL SAFETY   | 10.32      | 1              |     |
| Subject  | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>PERSONAL INJURY AND VEHICLE ACCIDENTS | 9/15/85    | 9/15/85        |     |

**GENERAL**

Accidents<sup>1</sup> resulting in personal injury that require medical treatment other than first aid, and any vehicle accident resulting in property damage or personal injury, must be reported and investigated as close to the time of occurrence as possible. In any case, the employee's statement and the supervisor's report should be made within 24 hours. If an accident resulted in death or serious injury to the employee, immediately telephone VP Operations and Corporate Risk Management; a written report must be made within 24 hours.

The purposes of accident investigations are to:

1. Analyze each accident and determine its cause.
2. Develop recommendations and take appropriate actions to prevent accidents, by training employees to eliminate unsafe practices and to be aware of mistakes, carelessness, and thoughtless actions of other persons.

**INVESTIGATION  
PROCEDURES**

To accomplish these objectives, the following accident investigation procedures are to be followed at all locations:

1. Reconstruct the event by examining the individual's actions in sequence; before, during and after the incident.
2. Closely examine the area where the accident occurred.
3. Interview and request written statements from the individual involved, various employee witnesses, and company physicians.
4. Determine the cause of the accident. Generally this can be classified by one or more of the following factors:

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<sup>1</sup> See definitions in Reference 10.57.

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| Section  | Reference  | Page           | End |
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| GENERAL SAFETY   | 10.32      | 2              |     |
| Subject  | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>PERSONAL INJURY AND VEHICLE ACCIDENTS | 9/15/85    | 9/15/85        |     |

INVESTIGATION  
PROCEDURES  
(Cont.)

Unsafe Conditions

a. Equipment

- Is it suitable for the operation?
- Does it have appropriate safeguards?
- Are maintenance schedules up-to-date?

b. Environmental

- Are visibility and noise levels comfortable?
- Are temperature and/or ventilation controls suitable?
- Is the working surface fatiguing or hazardous?

c. Process Arrangement

- Are bottlenecks present in the material flow or layout network?
- Are aisles blocked or obstructed?

Unsafe Acts

- a. Have established policies or work rules been violated?
- b. Did the incident occur as a result of improper or unauthorized use of equipment?
- c. Was performance of the task authorized?

Unsafe Personnel Factors

- a. Has the individual received updated training for the job task?
- b. Does the individual have qualifying skills and motor capabilities for the job task?
- c. Evaluate the individual's mental state: attentive, nervous, cooperative, etc.

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**McKesson**  
**Operations**

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| Subject  | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>PERSONAL INJURY AND VEHICLE ACCIDENTS | 9/15/85    | 9/15/85        |     |

INVESTIGATION  
PROCEDURES  
(Cont.)

It is absolutely essential that the root cause of the accident be identified. For example, a forklift accident might superficially be caused by a driver traveling at an unsafe speed, but the root cause may be a process bottleneck that disrupted the orderly and safe maneuvering of merchandise.

5. Develop recommendations to prevent future occurrences, specifically relating to:

- Company work rules, policies, and general procedures.
- Topics of training or safety programs.
- Repairs or modifications of equipment or operation to remove the hazardous condition.
- Personal protective equipment.
- Safety committee activities.

6. Set follow-up dates to assure timely implementation of the recommendations.

Upon completion of the investigation, present the report to the safety committee for their review, evaluation, and comments. Respond to the committee's suggestions and expedite the implementation of recommendations to achieve employee's receptive awareness.

REPORTING  
PROCEDURES

At the Time of Occurrence

1. Prepare form RM 100 "Accident Prevention Investigation Report" (Exhibit 1). Retain one copy for location records.<sup>1</sup> Send one photocopy to the Area Operations Manager, along with necessary completed insurance forms (see Corporate Risk & Insurance Management manual). He will distribute copies to: VP Operations; regional office; and Corporate Risk Management.

<sup>1</sup> These files must be available for review by OSHA and DOT inspectors (see References 10.56, 30.60, 30.61).

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**McKesson**  
**Operations**

| Section  | Reference  | Page           | End |
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| GENERAL SAFETY   | 10.32      | 4              | X   |
| Subject  | Issue Date | Effective Date |     |
| ACCIDENT INVESTIGATION GUIDELINES -<br>PERSONAL INJURY AND VEHICLE ACCIDENTS | 9/15/85    | 9/15/85        |     |

REPORTING  
PROCEDURES  
(Cont.)

2. In addition to the above forms, if an occupational injury or illness resulted in loss of one or more full days from work, a Lost Time Accident Report & Investigation (Exhibit 2) must be prepared in duplicate within 24 hours of the incident. Retain one copy for location records and send the other copy to the area office for the required signatures. The completed form is then to be signed by the Regional Operations Manager and the Regional Vice President, who will forward copies to Home Office executives indicated on the form.

At the End of each Quarter

1. Prepare a Quarterly Accident Information Summary (Exhibit 3). Retain one copy for location records and send the other copy to the Area Operations Manager. He will assemble all location summaries and forward them to the Home Office Operations Analyst within 15 days after the close of each quarter.
2. The Operations Analyst will prepare and distribute company level and regional summaries to Corporate Risk Management as well as to appropriate Chemical Home Office and field personnel.

For Unusual Incidents

Prepare an Unusual Incident Report (Exhibit 4). Remember that the main purpose of this report is to prevent a recurrence of any abnormal operation. Be thorough in investigating the incident. The Regional Operations Manager will route your report to the other Regions so they may take preventative action.

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MKIL189234

# Accident Prevention Investigation Report

**M-Kesson**

Please Type or Print Clearly

## Injury Classification

☐ First Aid Only ☐ OSHA Recordable  
☐ Lost Workday Case  
(Estimated # days \_\_\_\_\_)

|          |                  |               |
|----------|------------------|---------------|
| Location | Location Code No | Group/Company |
|----------|------------------|---------------|

Accident investigations should be initiated as soon as possible after the incident. This investigation report should be used as a worksheet for evaluating the incident. The information collected should be useful for developing claims reporting data and recommendations to prevent recurrence of the incident. This report does not replace the reports that are required to be filed with claims administration organizations, or reports required by federal or state regulatory agencies. For reference see Procedure Manual "Guidelines for Conducting Accident Prevention Investigations".

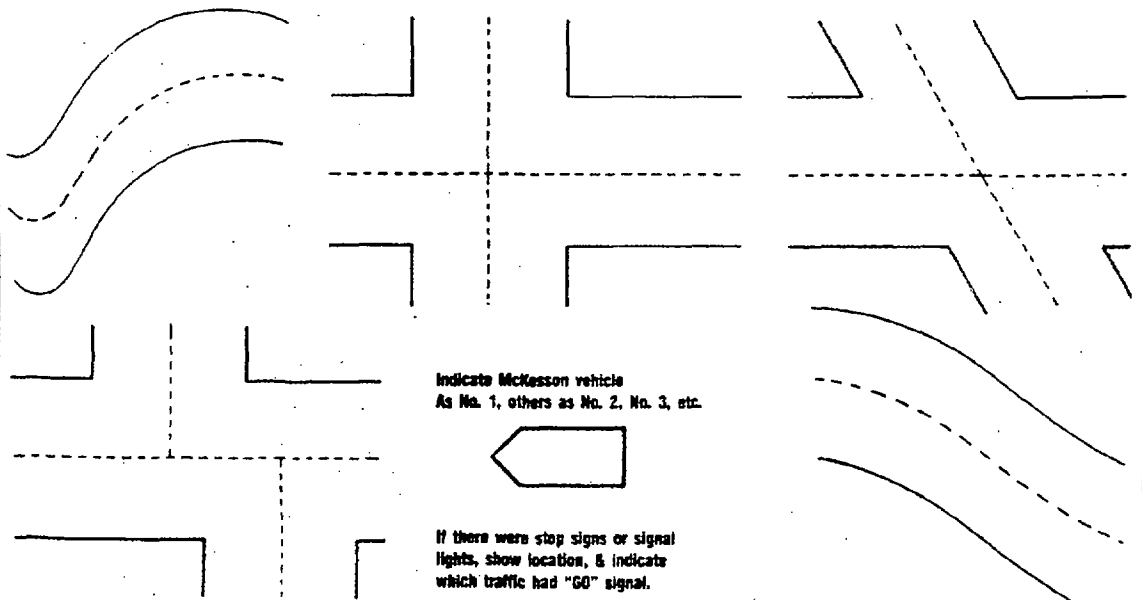
Investigative interviews of non-employees should not be pursued beyond name, address and phone number.

Photocopies of the report should be distributed to Corporate Risk Management and inter-company staff designated by group safety administrators.

|   |   |                                       |                    |
|---|---|---------------------------------------|--------------------|
| Information to be Completed by Supervisor | Employee's Name   | Age                                   | How Long Employed? |
|   | Occupation  | Is This His (Her) Regular Occupation? |                    |
|   | When Did Accident Occur?  | Date                                  | Time               |
|   | Where Did Accident Occur?   | Day of Week                           |                    |
|   | (Give Exact Location)<br>If on Company Premises Show Department or Area   |                                       |                    |
|   | How Did Accident Occur? Describe<br>Acquire the attending physicians report and written statements from the employee involved and employee witnesses. Retain for the location file. |                                       |                    |
| Nature of Injury Describe                 |   |                                       |                    |

If Vehicle Accident, Use One of the Following Diagrams & Complete the Information Requested Below

Were the occupants wearing their seat belts? ☐ Yes ☐ No



|                               |                  |       |       |
|-------------------------------|------------------|-------|-------|
| Speed & Direction of Vehicles | No. 1 (McKesson) | No. 2 | No. 3 |
| Weather                       | Road Conditions  |       |       |

**MKIL40234**

|  |   |                         |                   |
|--|---|-------------------------|-------------------|
| <b>Information to be Completed by Supervisor (cont'd.)</b> | When Was Accident First Reported?   | Time                    | To Whom Reported? |
|  | Was Medical Aid Required?   | Was First Aid Rendered? |                   |
|  | Describe the root cause of the accident. Include why:<br>Unsafe Conditions were present<br>Unsafe Acts occurred<br>Unsafe Personnel Factors existed   |                         |                   |
|  | Refer to:<br>Guidelines for Conducting Accident "Prevention" Investigations   |                         |                   |
|  | What recommendations were made to prevent future similar occurrences for this individual and other employees?   |                         |                   |
| <b>Safety Committee Review</b>                             | By what date will recommendations be implemented?   |                         |                   |
|  | Signature of Supervisor   |                         | Date              |
| <b>Info. to be Completed by Location Manager.</b>          | Safety Committee Review and additional recommendations  |                         |                   |
|  |   |                         |                   |
|  |   |                         |                   |
|  |   |                         |                   |
|  |   |                         |                   |
| <b>Info. to be Completed by Location Manager.</b>          | The Supervisor's Suggestion Was <u>  </u> Carried Out   |                         | Date              |
|  | The Supervisor's Suggestion Should <u>  </u> Be Carried Out   |                         | Proposed Date     |
|  | Reason  |                         |                   |
|  | Comments and alternative or additional recommendations  |                         |                   |
|  | Have you suggested that these recommendations be implemented for other locations within your region or group? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></span> |                         |                   |
| Signature of Location Manager                              |   | Date                    |                   |

MKIL40235

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LOST TIME ACCIDENT REPORT & INVESTIGATION

**M-Kesson**

TO: B. B. Blocker, HOC FROM: Facility \_\_\_\_\_ No. LTA's FYTD\* \_\_\_\_\_  
M. A. Minor, HOC Area \_\_\_\_\_ No. LTA's FYTD\* \_\_\_\_\_  
D. A. Davis, HOC \*Incl. this incident

ON: Employee \_\_\_\_\_ Date of Accident \_\_\_\_\_  
Job Title \_\_\_\_\_ Time of Occurrence \_\_\_\_\_  
Employment Date \_\_\_\_\_ Resulting Injury \_\_\_\_\_  
Years on This Job \_\_\_\_\_ Estimated Time Lost \_\_\_\_\_  
No. This FY: LTA's \_\_\_\_\_ WC's \_\_\_\_\_  
No. Last FY: LTA's \_\_\_\_\_ WC's \_\_\_\_\_

Accident Details

1. Where did it occur? ☐ Our Plant ☐ Other (explain) \_\_\_\_\_  
Any witnesses? ☐ No ☐ Yes (give names) \_\_\_\_\_
2. Where in the plant or location? \_\_\_\_\_
3. Name any specific equipment, machine, vehicle, etc. connected with or involved in this accident. \_\_\_\_\_
4. Describe what happened. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Accident cause: ☐ Unsafe act \_\_\_\_\_  
☐ Unsafe condition \_\_\_\_\_
6. Why did this act occur or condition exist? \_\_\_\_\_  
\_\_\_\_\_
7. How can it be prevented in the future? \_\_\_\_\_  
\_\_\_\_\_
8. Who will implement this? \_\_\_\_\_ When? \_\_\_\_\_
9. Summarize doctor's findings. \_\_\_\_\_
10. Who spoke/corresponded with doctor? \_\_\_\_\_
11. Can injured be put on light/other duties? ☐ What? \_\_\_\_\_
12. What disciplinary action resulted? \_\_\_\_\_

Facility Operations Mgr. Date

Area Director Date

Facility Manager Date

Regional Operations Mgr. Date

Area Operations Mgr. Date

Regional Vice President Date

LOST TIME ACCIDENT DEFINED: An occupational injury or illness resulting in loss of one or more full days from work. Must be reported by the facility manager on this form within 48 hours of incident to the Area Office. Area Office will send to Region. Regional Vice President will forward in triplicate to Home Office. (Rev. 1/85)

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McKESSON CORPORATION  
Chemical Group

QUARTERLY ACCIDENT INFORMATION SUMMARY

Location \_\_\_\_\_ Quarter Ended \_\_\_\_\_

Region \_\_\_\_\_

Date \_\_\_\_\_

I. Occupational Injuries & Illnesses

1. Number of Hours Worked \_\_\_\_\_  
Calculate by using a 40-hour work week base per employee, plus hourly worker overtime, less vacations and holidays. Include ALL salary and hourly workers.
2. Number of OSHA Recordable Cases \_\_\_\_\_  
(From Branch OSHA Log Posted for Qtr.)  
Any injury resulting in loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid.
3. Number of Lost Time Cases \_\_\_\_\_  
Occupational injuries resulting in one or more full days away from work.
4. Total Work Days Lost \_\_\_\_\_

II. Vehicle Accidents

1. Passenger Vehicle Miles Driven \_\_\_\_\_
2. Number of Passenger Vehicle Accidents. \_\_\_\_\_  
Specifically, all accidents in which a vehicle is involved, unless properly parked.
3. Truck Mileage Driven \_\_\_\_\_
4. Number of Truck Accidents. \_\_\_\_\_  
Specifically, all accidents in which a truck is involved, unless properly parked.

Prepared by \_\_\_\_\_

Manager's Signature \_\_\_\_\_

MKIL40237

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MKIL189238

UNUSUAL INCIDENT REPORT

\_\_\_\_\_ SPILL/POLLUTION  
\_\_\_\_\_ FIRE/EXPLOSION  
\_\_\_\_\_ LOSS OF MATERIAL/EQUIPMENT  
\_\_\_\_\_ PERSONAL INJURY  
\_\_\_\_\_ SAFETY VIOLATION  
\_\_\_\_\_ ABNORMAL OPERATION/EQUIPMENT  
\_\_\_\_\_ MISCELLANEOUS--EXPLAIN \_\_\_\_\_

BRANCH: \_\_\_\_\_

REPORT DATE: \_\_\_\_\_

TIME: \_\_\_\_\_ DATE: \_\_\_\_\_ DEPARTMENT: \_\_\_\_\_

SUPERVISOR \_\_\_\_\_

WHAT HAPPENED? (WHO, WHAT, WHEN, WHERE) \_\_\_\_\_

\_\_\_\_\_

WHY? \_\_\_\_\_

HOW COULD THIS INCIDENT HAVE BEEN PREVENTED? \_\_\_\_\_

\*RESULT OF THE INCIDENT: \_\_\_\_\_

\*IF RESULT OF INCIDENT INVOLVES PERSONAL INJURY OR LOSS OF EQUIPMENT, MANAGER MUST  
FILL OUT ACCIDENT REPORT FORM.

OPERATIONS MANAGER COMMENTS: \_\_\_\_\_

DISTRIBUTION: Area Operations Manager  
Regional Operations Manager  
File

OPERATIONS MANAGER'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

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**McKesson**  
**Operations**

| Section                                      | Reference  | Page           | End |
|--|------------|----------------|-----|
| GENERAL SAFETY                               | 10.33      | 1              | X   |
| Subject                                      | Issue Date | Effective Date |     |
| ACCIDENT REPORTING<br>GUIDELINES/DEFINITIONS | 9/15/85    | 9/15/85        |     |

**GENERAL**

Accident reporting is necessary to measure the success of a facility's safety program. Because we do not have infirmaries or professional medical services on our premises, all injury cases, whether they seem severe or not, are referred to a company doctor or an industrial clinic. The severity of an injury determines whether or not it is reported. To develop consistency and uniformity within the company, Exhibits 1 and 2 contain guidelines to help categorize "First Aid" type of injuries, as well as providing definitions of general terms used in safety reporting.

Accidents include vehicular and any other incident involving personal injury (employee or non-employee), but excluding first aid cases.

**MKIL40239**

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#### DEFINITIONS

1. Occupational (Work) Injury or Illness - Any death, injury or occupational disease suffered by a person which arises out of and in the course of his/her employment as a result of an incident or exposure, on or off the employer's premises, i.e., resulting from work activity or environment of employment.
2. Work Environment - The work environment is comprised of the physical location, equipment, materials processed or used, and the kind of operations performed in the course of an employee's work, whether on or off the employer's premises.
3. Recordable Cases - Deaths, injuries which require medical treatment (other than first aid), and illnesses.
4. Lost Time Accidents (or Lost Workday Cases) - An occupational injury or illness resulting in one or more full days absent from the workplace.
5. Lost Workday Cases - For the purpose of OSHA reporting (Form 200), lost workday cases include: a) Lost time accidents, b) Restricted activity, c) Temporary transfer to another assignment, and d) Working at the job less than full time.
6. Lost Workdays (Days away from work) - All days (whether consecutive or not) on which an employee is scheduled to work, but is absent because of occupational illness or injury.
7. Occupational Illness - Any abnormal condition or disorder such as dermatitis, rash, respiratory problem, poisoning, heat exhaustion, and hearing loss, caused by exposure to environmental factors associated with employment. Exposure may be caused by inhalation, absorption, ingestion or direct contact with dust, fumes, vapors or mists.

However, an allergic reaction to chemicals or dust is considered an illness only if the employee 1) receives medical treatment, 2) becomes a Lost Workday Case, 3) is transferred to another job, or 4) is terminated as a result of the allergic reaction.

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#### DEFINITIONS

8. Vehicle Accidents - Any vehicle accident resulting in property damage or personal injury.
9. DOT Reportable Accidents - DOT reportable accidents are those involving injury, death, spills in reportable quantities, and/or damage to property aggregating \$2,000 or more. This does not include an occurrence involving boarding or alighting from a stationary truck, or loading or unloading. (DOT reportable accidents should be shown apart from truck injury accidents.)
10. LTA and Recordable Injury Accident Rate - The number of deaths, illnesses, and injuries per 200,000 workhours of exposure. (200,000 workhours' exposure is approximately the number of hours worked by 100 employees in one year. The basis for calculating rates is that of the Bureau of Labor Statistics.) All employees in the region are included in the reporting of hours of exposure.
11. Auto and Truck Injury Accident Rate - The number of injury accidents per 1,000,000 miles driven, excluding accidents where the vehicle is properly parked.

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## MEDICAL vs. FIRST AID

### General

First Aid is limited to any one-time treatment and any follow-up visit for the purpose of observation of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care. First aid can be provided by a physician, nurse or other registered personnel.

Medical is treatment (see detailed analysis below) administered by a physician or nurse under the standing orders of a physician.

The detailed list which follows should be used in determining whether treatment is medical or first aid.

### Detail

1. Prescription Medications - Use of medication specifically prescribed to treat an occupational injury or illness normally constitutes medical treatment.

However, it shall be considered first aid when a single dose or application of a prescription medication is given on the first visit. Tetanus booster injections are considered as a preventative treatment and are included as first aid, except when a reaction to the injection requires medical treatment.

2. Diagnostic Procedures

- a. Surveillance or Observation which reveals no injury or illness shall not be considered medical treatment.
- b. Hospitalization for Observation is not considered medical treatment where no medical treatment is rendered other than first aid.
- c. Physical Examination, Observation, or Surveillance not substantiating subjective complaints in questionable cases is not considered medical treatment.

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## MEDICAL vs. FIRST AID

### 3. Bone Fractures

An x-ray examination for fractures is considered a diagnostic procedure, therefore, constitutes neither first aid nor medical treatment. When the x-ray is negative, the case is non-recordable unless medical treatment is provided for supplementary injuries. All bone fractures are recordable medical treatment cases, except where all of the following criteria are met:

- a. The fracture is a hairline fracture.
- b. The fracture does not dislocate the bone.
- c. No splinting is required.
- d. The fracture does not interfere with the capability of the employee to do the normal duties of his job.
- e. No other medical treatment is provided.

### 4. Cuts and Lacerations

First Aid - Treatment limited to cleaning wound, soaking, applying antiseptic and/or first aid medication and bandaging on first visit. Follow-up visits limited to observation, including changing dressing and bandage. Additional cleaning and application of antiseptic permissible as first aid where required by work duties likely to soil bandage.

Medical Treatment - Injury requires stitches, cutting away dead skin, treatment of infection, or other professional treatment.

### 5. Abrasions

First Aid - Same as cuts and lacerations, except ointments can be added on follow-up visits to prevent drying and cracking of skin.

Medical Treatment - Injury requires careful examination for removal of embedded foreign material, multiple soaking, whirlpool treatment, treatment of infection, or other professional treatment. Any case involving more than a minor, spot-type injury; for example, abrasions occurring to greater than full skin depth are considered medical treatment.

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MEDICAL vs. FIRST AID

6. Bruises

First Aid - Treatment limited to a single soaking or application of cold compresses on a minor bruise. Follow-up visits limited only to observation.

Medical Treatment - Injury requires multiple soaking or other extended care beyond mere observation.

7. Splinters and Puncture Wounds

First Aid - Treatment limited to cleaning wound, removal of foreign object(s) by tweezers or other simple techniques, application of antiseptics and first aid medications and bandaging on first visit. Follow-up visits restricted to observation of wounds, including minor first degree burns.

Medical Treatment - Injury requires removal of foreign object(s) by physician due to depth of penetration, size or shape of object(s) or location of wound. Also, injuries requiring treatment for infection, other professional treatment (assuming treatments are required as related to the injury involved).

8. Burns

First Aid - Treatment limited to cleaning or flushing surface, soaking, applying cold compresses, antiseptics and/or first aid medication and bandaging on first visit. Follow-up visits restricted to observation of wounds, including minor first degree burns.

Medical Treatment - Injury requires a series of treatments including soaks, whirlpool, cutting away dead skin, and application of medications. Most second and third degree burns and extensive first degree burns shall be deemed to require medical treatment.

9. Sprains and Strains

First Aid - Treatment limited to soaking, application of cold compresses, and use of elastic bandage on first visit. Follow-up visits for observation, including re-applying bandage.

Medical Treatment - Injury requires series of hot and cold soaks, use of whirlpools, diathermy treatment, or other professional treatment.

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MEDICAL vs. FIRST AID

10. Eye Injuries

First Aid - Treatment limited to irrigation, removal of foreign material not imbedded in eye, and application of first aid medications. Precautionary visit (special examination) to doctor is still considered as first aid if treatment is limited to above items. Follow-up visits for observation only.

Medical Treatment - Cases involving removal of imbedded foreign objects, use of prescription medications or other professional treatment.

11. Inhalation of Toxic or Corrosive Gases

First Aid - Treatment limited to removal to fresh air or the one-time administration of oxygen for several minutes, prescription drugs for preventive reasons, and observation provided there is no positive diagnosis of injury.

Medical treatment - Any professional treatment beyond the above. All cases involving loss of consciousness.

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**McKesson**  
**Operations**

| Section           | Reference  | Page           | End |
|-------------------|------------|----------------|-----|
| GENERAL SAFETY    | 10.40      | 1              | X   |
| Subject           | Issue Date | Effective Date |     |
| AUDIO-VISUAL AIDS | 9/15/85    | 9/15/85        |     |

**INTRO-  
DUCTION**

Films for accident and loss prevention training are available from both Corporate Loss Prevention (Exhibit 1) and Chemical Operations (Exhibit 2).

**REQUEST  
PROCEDURE**

1. Send request to appropriate person as shown in the exhibits.
2. If the film is unavailable for the date(s) desired, the person ordering will be notified.
3. Return the film immediately after use, noting its condition. This is to assure availability for other locations.
4. Copy Area and Regional Operations Managers on all requests.

**MKIL40246**

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The following films are available from Corporate. Send request to:  
Loss Prevention Coordinator, McKesson Corporation, One Post Street,  
33rd floor, San Francisco, CA 94104.

| <u>TITLE</u>                           | <u>FORMAT</u> |
|--|---------------|
| 1. Backfire                            | VHS           |
| 2. The Best Defense                    | VHS           |
| 3. Safe and Awake                      | VHS           |
| 4. Rediscover the Safety Belt          | VHS           |
| 5. Danger Zone...Your Back             | VHS           |
| 6. Must We Fall?                       | VHS           |
| 7. Safety: A State of Mind             | VHS           |
| 8. Making Meetings Mean Something      | VHS           |
| 9. The "We" Approach to Safety         | VHS           |
| 10. Horseplay? Horses Aren't That Dumb | VHS           |
| 11. Pre-flight Your Job                | VHS           |
| 12. Keep It Clean                      | VHS           |
| 13. Finding a Cure for Accidents       | VHS           |
| 14. Defusing the Conflict Bomb         | VHS           |
| 15. It Can't Happen to Me              | VHS           |
| 16. You're the Teacher                 | VHS           |
| 17. Are You Calling Me a Drunk?        | VHS           |
| 18. Not by Accident                    | VHS           |
| 19. Safe Operation of a Forklift Truck | VHS           |
| 20. Minimizing Back Strain on the Job  | VHS           |
| 21. The Point of No Return             | VHS           |

**MKIL40247**

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The following films are available from Chemical. Send request to:  
Operations Secretary, McKesson Chemical Company, One Post Street,  
27th floor, San Francisco, CA 94104.

| TITLE                              | FORMAT             |
|------------------------------------|--------------------|
| 1. Work Smarter Not Harder         | VHS                |
| 2. Rediscover the Safety Belt      | VHS                |
| "CHEMSAFE" PROGRAM                 |                    |
| 3. Introduction to Chemical Safety | VHS                |
| 4. Corrosives                      | VHS                |
| 5. Solvents                        | VHS                |
| 6. Oxidizers                       | VHS                |
| 7. Poisons                         | VHS                |
| 8. Gases                           | VHS                |
| 9. Explosives                      | VHS                |
| 10. Carcinogens                    | VHS                |
| 11. Avoiding Back Injuries         | Audiscan Cartridge |
| 12. Avoiding Back Injuries         | Beta               |
| 13. Deadly Cargo                   | 3/4"               |
| "SAFE HANDLING" PRESENTATIONS      |                    |
| 14. DMF                            | 3/4"               |
| 15. Formaldehyde                   | 3/4"               |
| 16. Hydrogen Peroxide              | 3/4"               |
| 17. Methanol                       | 3/4"               |
| 18. THF                            | 3/4"               |
| 19. Emergency Drum Repair          | Tape/Slide         |
| 20. Metro Survival                 | VHS                |

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**McKesson**  
**Operations**

| Section              | Reference  | Page           | End |
|----------------------|------------|----------------|-----|
| GENERAL SAFETY       | 10.54      | 1              |     |
| Subject              | Issue Date | Effective Date |     |
| GOVERNMENT INQUIRIES | 9/15/85    | 9/15/85        |     |

**PURPOSE** These instructions state Corporate policy with regard to handling of inquiries from federal, state or local government agencies or other regulatory bodies.

**POLICY** It is the policy of the Corporation to cooperate to the fullest extent with all governmental bodies and to permit the examination of our facilities and pertinent Corporate records by authorized governmental representatives. Concurrently, the interests of the Corporation are to be fully protected.

**JURISDICTION** The Service Center Operations Manager has primary responsibility for handling government inquiries. In the Operations Manager's absence, the responsibility may be delegated to a responsible and knowledgeable employee of the Service Center. Be aware that, while it is not company policy to do so, you may deny entry to environmental inspectors unless they have a search warrant. Without such a warrant, an inspector is a guest in the plant, and we are under no obligation to answer questions or show any particular part of the plant. If you have any questions about a particular situation (e.g., whether it would be advisable to deny entry to an inspector without a warrant), contact the Chemical Group Counsel or other member of the Law Department, immediately.

**DEFINITION** An inquiry is intended to include every contact whether by letter, service of formal legal documents (i.e., summonses, subpoenas, etc.), telephone, telegraph, or personal visit. Examples of agencies from which such inquiries may come are:

The Department of Agriculture  
Department of Transportation  
Environmental Protection Agency  
Food and Drug Administration  
Drug Enforcement Agency  
National Labor Relations Board

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**McKesson**  
**Operations**

| Section              | Reference  | Page           | End |
|----------------------|------------|----------------|-----|
| GENERAL SAFETY       | 10.54      | 2              |     |
| Subject              | Issue Date | Effective Date |     |
| GOVERNMENT INQUIRIES | 9/15/85    | 9/15/85        |     |

**DEFINITION**  
(Cont.)

Wage and Hour Division  
Equal Opportunity Commission  
Occupational Safety and Health Administration  
Federal Bureau of Investigation  
Justice Department  
Federal Trade Commission  
Internal Revenue Service  
Department of Health  
State and local taxing authorities, local fire departments  
State Environmental Protection Agency, etc.

This list is informational only and is not intended to be all-inclusive.

**PROCEDURE**

**1. Responsibility - Personnel**

Governmental inquiries are to be handled by the Service Center Operations Manager or responsible employee to whom the authority has been delegated. In the absence of both, the person making the inquiry is to be advised of their absence and be asked either to return at a specified time or to leave his/her name, office, and telephone number so that the investigator may be contacted on their return. If an investigator will not cooperate (which is rare) and the Service Center Operations Manager cannot be reached, telephone the Company Operations Department or the Corporate Law Department for instructions.

**2. Identification**

Obtain the name of the investigator and the name, address and phone number of the investigating agency. Check his/her credentials for authenticity. If the inquiry is by telephone, ask to be permitted to return the call in five minutes. This permits the office to be properly identified on callback.

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**McKesson**  
**Operations**

| Section              | Reference  | Page           | End |
|----------------------|------------|----------------|-----|
| GENERAL SAFETY       | 10.54      | 3              |     |
| Subject              | Issue Date | Effective Date |     |
| GOVERNMENT INQUIRIES | 9/15/85    | 9/15/85        |     |

PROCEDURE  
(Cont.)

Only records relating to a specific type of inspection should be made available for examination by an inspector. If there is question about the authority of a person to see specific records, the Company Operations Department or the Corporate Law Department should be contacted for approval prior to making any material available.

3. Procedures

Governmental inquiries ARE NOT CONSIDERED ROUTINE. Investigations by the Justice Department, Federal Trade Commission, Environmental Protection Agency, and Federal Bureau of Investigation can be of an important nature and may involve questions of civil and/or criminal responsibility.

Request a pre-inspection conference prior to beginning the inspection. During the conference complete appropriate parts of the "Report of Government Inspection" (Exhibit 1). Ask the investigator to state the nature of the inquiry and the information desired. If the information is readily available, (i.e., bills of lading for hazardous materials shipment) release it for review. If the information is of a more complex nature (tax records, etc.) make a note, and advise that you will obtain the information and either call or write when it is available. If the investigator will not cooperate, call the Company Operations Department or the Corporate Law Department for instructions.

NOTE: When units of the Corporation are visited by Internal Revenue Agents or local tax authorities, the Corporate Tax Department is to be immediately notified by phone. No information is to be released to such agents or authorities without specific authorization by the Corporate Tax Department.

**MKIL40251**

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**McKesson**  
**Operations**

| Section              | Reference  | Page           | End |
|----------------------|------------|----------------|-----|
| GENERAL SAFETY       | 10.54      | 4              |     |
| Subject              | Issue Date | Effective Date |     |
| GOVERNMENT INQUIRIES | 9/15/85    | 9/15/85        |     |

PROCEDURE  
(Cont.)

4. Providing Information

Only after a Service Center Operations Manager, or an authorized delegate, has approved or obtained approval (as specified above), may the investigation proceed. Only actual questions should be responded to. NO information is to be volunteered. If the answer is not known, the investigator should be advised. No conjecture should be given as to the possible answer. If documents are to be examined, only those absolutely necessary and SPECIFICALLY called for are to be presented.

If the investigator asks to take any documents, only copies are to be given; originals are to be retained. An additional copy of any documents given out should be made and attached to the "Report of Government Inspection" (Exhibit 1).

If the inquiry involves a series of questions and answers, a written summary should be made promptly and list, as accurately as possible, each question and answer. A copy of the statement should be attached to the "Report of Government Inspection" (Exhibit 1). If the inspector takes photographs, the McKesson representative should attempt to take duplicate photographs and/or request a copy. If the inspector takes soil or water samples at the facility, the McKesson representative should take (or request the inspector to take) split samples.

Request a post-inspection conference with the inspector. At this conference ask the inspector to summarize his/her findings and indicate the action, if any, to be taken.

5. Reporting of Inquiries

Following an inquiry, complete the "Report of Government Inspection" (Exhibit 1) and send it to the appropriate corporate office as indicated below.

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MKIL189253

**McKesson**  
Operations

| Section              | Reference  | Page           | End |
|----------------------|------------|----------------|-----|
| GENERAL SAFETY       | 10.54      | 5              | X   |
| Subject              | Issue Date | Effective Date |     |
| GOVERNMENT INQUIRIES | 9/15/85    | 9/15/85        |     |

PROCEDURE  
(Cont.)

Copies of documents furnished, or a statement of questions asked and answers supplied, should be attached. Attach copies of any written inquiry and any written response. Direct these reports as follows:

- a. AUDITS OR INQUIRIES BY INTERNAL REVENUE AGENTS, LOCAL TAX AUTHORITIES AND OTHER TAX INQUIRIES to the Corporate Tax Department.
- b. INQUIRIES RELATING TO PERSONNEL, LABOR MATTERS, WAGES AND HOURS, EMPLOYMENT DISCRIMINATION, SAFETY, ETC., to the Corporate Personnel Department.
- c. "Report of Government Inspection" (Exhibit 1) to the Vice President, Operations, at Home Office, San Francisco. The Operations Department will arrange for redistribution to individuals as indicated on the form.

**MKIL40253**

MK094663

**MKIL189254**

TO: H. O. Operations  
Regional Operations Manager  
Area Operations Manager  
Chemical Group Counsel

REPORT OF GOVERNMENT INSPECTION

McKESSON FACILITY: \_\_\_\_\_

Inspected By: ☐ State ☐ Federal ☐ Local  
☐ OSHA ☐ EPA ☐ DOT ☐ Other

Visit Authorized By \_\_\_\_\_ Date Authorized \_\_\_\_\_

INSTRUCTIONS: - Send in the report immediately. Attach copies of any documents received or given. Do not delay transmittal if waiting for a follow-up written response. For additional details, use attachments.

- Complete questions 1-7 during the pre-inspection conference.

- Complete questions 8-13 during the post-inspection conference.

- Complete questions 14-16 for all ENVIRONMENTAL Inspections.

1. Time and date of contact by representative(s): \_\_\_\_\_

2. Name(s) and title(s) of representative(s): \_\_\_\_\_

3. Credentials verified: \_\_\_\_\_ YES \_\_\_\_\_ NO, entry denied

4. Name of governmental agency, address and phone number at which representative(s) works: \_\_\_\_\_

5. Purpose of inspection: \_\_\_\_\_

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MKIL189255

Chem Op. 10.54  
Exhibit 1  
6/30/86  
Page 2 of 4

For environmental inspections,

6.a. Will samples or other monitorings be taken? ☐ YES ☐ NO

b. If yes, request a receipt(s) for samples taken and request results of sampling analyses.

☐ receipts received

☐ results requested

☐ does not apply

7.a. Is the inspection the result of a complaint(s)?

☐ YES ☐ NO

b. If yes, request a copy of the complaint(s).

☐ requested

☐ requested and received

☐ does not apply

Complete questions 8-13 as part of, or immediately after, the post-inspection conference.

8. Length of visit: \_\_\_\_\_

9. What prompted visit: \_\_\_\_\_

10. What specifically was inspected: \_\_\_\_\_

11. What records were requested: \_\_\_\_\_

12. What records were given: \_\_\_\_\_

MKIL40255

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MKIL189256

13. Ask the government inspector to identify any potential problems observed.

\_\_\_\_\_ No response given

\_\_\_\_\_ Response to be mailed

\_\_\_\_\_ Potential problems specified:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Complete questions 14-16 for all ENVIRONMENTAL inspections.

- 14.a. Specify any pictures taken: \_\_\_\_\_

\_\_\_\_\_

- b. Were duplicates of pictures taken by a Service Center representative ? \_\_\_\_\_ YES (forward to Vice President, Operations  
\_\_\_\_\_ NO

15. Specify samples or other monitorings taken (i.e.: size, location, number, type of equipment used): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

16. If possible, pull duplicate samples, logging the sample container with the time, date, location and name of person taking the sample. Immediately ship to McKesson Environmental Services, laboratory for archiving.

\_\_\_\_\_ Duplicate(s) pulled and shipped

\_\_\_\_\_ Unable to pull duplicates

\_\_\_\_\_ Does not apply

MKIL40256

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MKIL189257

Chem Op. 10.54  
Exhibit 1  
6/30/86  
Page 4 of 4

17. Additional comments: \_\_\_\_\_

\_\_\_\_\_

18. Recommendations: \_\_\_\_\_

\_\_\_\_\_

Report Prepared By:

\_\_\_\_\_  
Date Signed

\_\_\_\_\_  
Service Center Operations Manager

**MKIL40257**

MK094667

MKIL189258

**McKesson**  
Operations

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| GENERAL SAFETY     | 10.55      | 1              |     |
| Subject            | Issue Date | Effective Date |     |
| SUPPLIER INQUIRIES | 9/15/85    | 9/15/85        |     |

**PURPOSE** These instructions state Corporate policy with regard to supplier inquiries and on site inspections.

**POLICY** It is the policy of the Corporation to cooperate with its suppliers while at the same time fully protecting the interests of the Company. Supplier inspections are to be pre-authorized in order to minimize disruption of service while providing for the safety of supplier representatives. They should generally be scheduled in advance for a time mutually agreeable to the Company and the supplier.

**PROCEDURES** 1. Responsibility - Personnel

Supplier inspections are to be authorized in advance by the Vice President of Marketing and conducted by the Service Center Operations Manager.

2. Identification

Obtain the business card of the supplier representative(s) and check other credentials as necessary for all individuals arriving at the service center. Since only pre-authorized inspections are permitted, and these are generally scheduled in advance, credentials for some individuals may be verified through a phone call to the appropriate supplier.

Records must be withheld from examination by unauthorized individuals. If there is any question about the authority of a person to see any records, contact the Company Operations Department or the Corporate Law Department for instructions.

3. Providing Information

The inspection may proceed only after it has been pre-authorized, the identity of the inspector(s) verified by the Service Center Operations Manager and the McKesson Confidentiality Agreement signed (Exhibit 1).

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**McKesson**  
**Operations**

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| GENERAL SAFETY     | 10.55      | 2              | X   |
| Subject            | Issue Date | Effective Date |     |
| SUPPLIER INQUIRIES | 9/15/85    | 9/15/85        |     |

**PROCEDURES**  
**(Cont.)**

Only actual questions should be responded to. Information should not be volunteered. If an answer is not known, advise the supplier representative. If documents (i.e., operating logs, inspection records) are examined, only those absolutely necessary and specifically called for are to be presented.

If the supplier representative requires copies of documents, ask them to make this request in writing. Forward any such requests as an attachment to the "Report of Supplier Inspection" (Exhibit 2).

Discussions on pricing or volume should be avoided. Inquiries concerning our prices should be referred to the Vice President of Marketing.

**4. Reporting of Inspections**

Following an inspection, complete the "Report of Supplier Inspection" (Exhibit 2), and send to the Vice President, Operations, at Home Office, San Francisco. The Operations Department will arrange for redistribution to individuals as indicated on the form.

Copies of documents furnished and any written inquiry or response should be attached to the form. SEND IN THE REPORT AND CONFIDENTIALITY AGREEMENT(S) IMMEDIATELY. Do not delay transmittal while waiting for a follow-up written response or report.

Any post-inspection correspondence or critique received from the Supplier after the "Report of Supplier Inspection" (Exhibit 2) should be promptly forwarded to the Vice President, Operations, at Home Office, San Francisco for redistribution to individuals as indicated on the form.

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McKESSON CHEMICAL COMPANY  
CONFIDENTIALITY AGREEMENT

McKesson Chemical Company ("McKesson") utilizes certain methods, processes, techniques, equipment, business information, marketing data and customer lists (the "Proprietary Information") in the conduct of its business as a wholesale distributor of industrial chemicals. In the course of your inspection of the McKesson facility you may obtain certain knowledge, information or data concerning the Proprietary Information. Accordingly, in order that McKesson may protect and preserve the confidentiality of the Proprietary Information, you hereby agree, as a condition to conducting the inspection you have requested, as follows:

1. The Proprietary Information relating to the conduct of McKesson's business as a wholesale distributor of industrial chemicals is confidential and proprietary to McKesson.
2. You will protect and preserve the Proprietary Information as secret and confidential, and will instruct any officer, director, employee or agent of your company who receives the Proprietary Information to treat it as such.
3. You will not disclose, divulge, communicate or reveal the Proprietary Information to any third party, or to any of your company's officers, directors, employees or agents unless you reasonably believe that: (i) said persons have a need to review the Proprietary Information for purposes of your business relationship with McKesson; or (ii) you are required by legal process to do so.
4. You will promptly return to us all written Proprietary Information you may have received, and all copies thereof, upon the termination of the business relationship between your company and McKesson.
5. You will remain bound by the provisions of this Confidentiality Agreement for a period of ten (10) years from the date of its execution.
6. In the event you breach, or threaten to breach this Agreement, or any provision thereof, McKesson will suffer irreparable injury to its business, and damages would be impossible to fully ascertain. You therefore agree that upon any threatened, attempted or actual breach of this Agreement, McKesson shall be entitled to injunctive relief, together with such other legal remedies as may be available (including reasonable attorney's fees and costs of suit).

Finally, we agree that the term "Proprietary Information" does not include information which (a) is or becomes generally available to the public, other than as a result of disclosure by your company; (b) was known by you prior to its disclosure to you

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CHEM OP 10.55 Exhibit 1  
9/15/85 9/15/85  
Page 2 of 2

by McKesson, provided, however, that this exclusion will not apply to novel combinations of known processes, methods, or equipment not as a whole known to you or to those persons ordinarily skilled in the art; (c) becomes available to you on a non-confidential basis from a source other than McKesson, provided that such source is not bound by a Confidentiality Agreement with McKesson which prohibits disclosure; or (d) is in the public domain. The burden of proving these exceptions to the confidentiality and use provisions of this Agreement rests with you.

If you are in agreement with all of the foregoing, kindly sign and return the enclosed copy which will constitute our agreement concerning the matters addressed.

Very truly yours,

McKESSON CHEMICAL COMPANY

By \_\_\_\_\_

Agreed to and accepted:

\_\_\_\_\_

By \_\_\_\_\_

Dated: \_\_\_\_\_

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TO: H. O. Operations  
Regional Operations Manager  
Area Operations Manager  
Chemical Group Counsel

REPORT OF SUPPLIER INSPECTION

McKESSON FACILITY: \_\_\_\_\_

Visit Authorized By \_\_\_\_\_ Date Authorized \_\_\_\_\_

Send in the report immediately. Attach copies of any documents received or given. Do not delay transmittal if waiting for a follow-up written response. For additional details, use reverse side or attachments.

1. Time and date of contact by representative(s): \_\_\_\_\_
2. Name(s) and title(s) of representative(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Name of supplier and division, address and phone number at which representative(s) works: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Purpose of inspection: \_\_\_\_\_  
\_\_\_\_\_
5. Length of visit: \_\_\_\_\_
6. What prompted visit: \_\_\_\_\_
7. What specifically was inspected: \_\_\_\_\_
8. What records were given or requested: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. Any pictures taken (specify): \_\_\_\_\_
10. Additional comments: \_\_\_\_\_
11. Supplier recommendations: \_\_\_\_\_  
\_\_\_\_\_

Report Prepared by: \_\_\_\_\_

MKIL40262

Date Signed \_\_\_\_\_

S.C. Operations Manager

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**McKesson**  
Operations

| Section                           | Reference  | Page           | End |
|-----------------------------------|------------|----------------|-----|
| GENERAL SAFETY                    | 10.56      | 1              | X   |
| Subject                           | Issue Date | Effective Date |     |
| RECORDKEEPING REQUIREMENTS (OSHA) | 9/15/85    | 9/15/85        |     |

INTRO-  
DUCTION

Exhibit 1 which follows is a booklet containing recordkeeping forms which must be used to record work-related injuries and illnesses. It also contains current information about recordkeeping responsibilities under the Occupational Safety and Health Act of 1970.

EMPLOYEE  
ACCESS

Recent OSHA legislation has given employees the legal right to have access to the employer's log of occupational illness and injuries. This should be made available to employees upon request.

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## **Recordkeeping Requirements Under the Occupational Safety and Health Act of 1970**

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This booklet contains new recordkeeping forms which must be used to record work related injuries and illnesses which occur on or after January 1, 1978. It also contains current information about recordkeeping responsibilities under the Occupational Safety and Health Act of 1970. It replaces a booklet which was issued in 1975.

U.S. Department of Labor  
Occupational Safety and Health Administration  
Revised 1978

**MKIL40264**

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## Recordkeeping Requirements

The Occupational Safety and Health Act of 1970 requires employers to prepare and maintain records of occupational injuries and illnesses. The Bureau of Labor Statistics is responsible for developing and maintaining an effective recordkeeping program. In most States, a statistical agency cooperates with the Bureau in administering the recordkeeping program. Records of injuries and illnesses are necessary for carrying out the purposes of the Act. They are designed to assist compliance safety and health officers in making inspections and investigations. They also provide the basis for a statistical program which produces reliable injury and illness incidence rates and other measures. This information, together with required supplementary records, also will be helpful to employers in identifying many of the factors which cause injuries and illnesses in the workplace.

The following presentation summarizes the OSHA recordkeeping regulations, and should answer most of your questions about OSHA recordkeeping. Further information can be obtained from the State statistical agency or from the Bureau of Labor Statistics Regional Office. See page 4 and back cover for addresses.

### Recordkeeping Exemptions

Recordkeeping is not required for the following employers:

Small employers which employed no more than ten (10) full- or part-time employees at any one time during the previous calendar year. A few small employers will have to maintain records if they are selected to participate in the annual survey of occupational injuries and illnesses. They will be notified in advance and supplied with the necessary forms and instructions. Also, State safety and health laws may require small employers to keep injury and illness records. Small employers are not exempt from the requirement to report any accident which results in a fatality or the hospitalization of five (5) or more employees.

Note: If an employer has more than 1 establishment with combined employment of more than 10 employees, records must be kept for all individual establishments.

Employers of domestics in the employer's private residence for the usual purposes of housekeeping or child care, or both.

Employers in religious activities but only with respect to the conduct of religious services or rites. Employees engaged in such services or rites include clergymen, choir members, organists and other musicians, ushers, and the like. NOTE: Records of injuries and illnesses occurring to employees while performing secular activities must be kept. Recordkeeping is also required for employees of private hospitals, schools, orphanages, and commercial establishments owned or operated by religious organizations.

### State and Local Government Agencies

In certain States, agencies of State and local governments are required to keep injury and illness records for their employees in accordance with State regulations.

### Location of Records

Ordinarily, records must be maintained at each establishment (workplace). See the reverse side of form OSHA No. 200 for a definition of the term establishment. If an employer has more than one establishment, a different set of records must be maintained at each one.

Some firms, such as those engaged in agriculture, construction, transportation, and the like, have activities which are physically dispersed. Records of injuries and illnesses to employees engaged in such activities may be maintained at the place where employees report each day. If such employees do not regularly report to the same place, records may be maintained at a central place for each group of employees regularly supervised by the same person. If records are maintained centrally, two conditions must be met. One, the address and telephone number of the place where the records are kept must be available at the worksite; and two, there must be personnel available at the central place during normal business hours to provide information from the records.

Some employees, such as traveling salesmen and technicians, do not report to a single establishment and are not generally supervised in their daily work. Records for such employees shall be maintained either at the base from which they operate or at the place from which they are paid.

### Preparation and Maintenance of Records

OSHA recordkeeping is not complicated. Only two forms must be maintained. A copy of each is found in this booklet.

#### The Log and Summary [OSHA No. 200]

The log is a convenient means for classifying injury and illness cases and for noting the extent of and outcome of each. Not every injury or illness occurring in the workplace is recordable. Definitions on the back of the OSHA No. 200 will explain how to determine which cases must be recorded. The back of the form also contains information on posting requirements for this form.

Although other records must be maintained at the establishment to which they refer, it is possible to prepare and maintain the log at another location, using data processing equipment if desired. If the log is prepared elsewhere, a copy updated to within 45 calendar days must be present at all times in the establishment.

#### The Supplementary Record [OSHA No. 101]

For every recordable injury or illness, it is necessary to record additional information requested on the OSHA No. 101 form. However, the OSHA No. 101 form itself does not have to be used. Worker's compensation, insurance or other reports are acceptable supplementary records if they contain all items found on the OSHA No. 101 form. If they do not, the missing items must be added somewhere on the same form or on a separate attachment.

Supplementary records must be completed and present in the establishment within six (6) workdays after the employer has been notified of an injury or illness case.

### Supplementary Record of Occupational Injuries and Illnesses

#### EMPLOYER

1. Name \_\_\_\_\_  
2. Mail address \_\_\_\_\_  
(No. and street) (City or town) (State)  
3. Location, if different from mail address \_\_\_\_\_

#### INJURED OR ILL EMPLOYEE

4. Name \_\_\_\_\_ Social Security No. \_\_\_\_\_  
(First name) (Middle name) (Last name)  
5. Home address \_\_\_\_\_  
(No. and street) (City or town) (State)  
6. Age \_\_\_\_\_ 7. Sex: Male \_\_\_\_\_ Female \_\_\_\_\_ (Check one)  
8. Occupation \_\_\_\_\_  
(Enter regular job title, not the specific activity he was performing at time of injury.)  
9. Department \_\_\_\_\_  
(Enter name of department or division in which the injured person is regularly employed, even though he may have been temporarily working in another department at the time of injury.)

#### THE ACCIDENT OR EXPOSURE TO OCCUPATIONAL ILLNESS

10. Place of accident or exposure \_\_\_\_\_  
(No. and street) (City or town) (State)  
If accident or exposure occurred on employer's premises, give address of plant or establishment in which it occurred. Do not indicate department or division within the plant or establishment. If accident occurred outside employer's premises at an identifiable address, give that address. If it occurred on a public highway or at any other place which cannot be identified by number and street, please provide place references locating the place of injury as accurately as possible.  
11. Was place of accident or exposure on employer's premises? \_\_\_\_\_ (Yes or No)  
12. What was the employee doing when injured? \_\_\_\_\_  
(Be specific. If he was using tools or equipment or handling material, name them and tell what he was doing with them.)  
13. How did the accident occur? \_\_\_\_\_  
(Describe fully the events which resulted in the injury or occupational illness. Tell what happened and how it happened. Name any objects or substances involved and tell how they were involved. Give full details on all factors which led or contributed to the accident. Use separate sheet for additional space.)

#### OCCUPATIONAL INJURY OR OCCUPATIONAL ILLNESS

14. Describe the injury or illness in detail and indicate the part of body affected. \_\_\_\_\_  
(e.g.: amputation of right index finger at second joint; fracture of ribs; lead poisoning; dermatitis of left hand, etc.)  
15. Name the object or substance which directly injured the employee. (For example, the machine or thing he struck against or which struck him; the vapor or poison he inhaled or swallowed; the chemical or radiation which irritated his skin; or in cases of strains, hernias, etc., the thing he was lifting, pulling, etc.) \_\_\_\_\_  
16. Date of injury or initial diagnosis of occupational illness \_\_\_\_\_ (Date)  
17. Did employee die? \_\_\_\_\_ (Yes or No)  
OTHER  
18. Name and address of physician \_\_\_\_\_  
19. If hospitalized, name and address of hospital \_\_\_\_\_  
Date of report \_\_\_\_\_ Prepared by \_\_\_\_\_  
Official position \_\_\_\_\_

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**SUPPLEMENTARY RECORD OF  
OCCUPATIONAL INJURIES  
AND ILLNESSES**

To supplement the Log and Summary of Occupational Injuries and Illnesses (OSHA No. 200), each establishment must maintain a record of each recordable occupational injury or illness. Worker's compensation, insurance, or other reports are acceptable as records if they contain all facts listed below or are supplemented to do so. If no suitable report is made for other purposes, this form (OSHA No. 101) may be used or the necessary facts can be listed on a separate plain sheet of paper. These records must also be available in the establishment without delay and at reasonable times for examination by representatives of the Department of Labor and the Department of Health, Education and Welfare, and States accorded jurisdiction under the Act. The records must be maintained for a period of not less than five years following the end of the calendar year to which they relate.

Such records must contain at least the following facts:

- 1) *About the employer*—name, mail address, and location if different from mail address.
- 2) *About the injured or ill employee*—name, social security number, home address, age, sex, occupation, and department.
- 3) *About the accident or exposure to occupational illness*—place of accident or exposure, whether it was on employer's premises, what the employee was doing when injured, and how the accident occurred.
- 4) *About the occupational injury or illness*—description of the injury or illness, including part of body affected; name of the object or substance which directly injured the employee; and date of injury or diagnosis of illness.
- 5) *Other*—name and address of physician; if hospitalized, name and address of hospital; date of report; and name and position of person preparing the report.

SEE DEFINITIONS ON THE BACK OF OSHA FORM 200.

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columns 12 and 13 — INJURIES OR ILLNESSES WITHOUT LOST WORKDAYS. Self-explanatory.

columns 7a through 7g — TYPE OF ILLNESS.

Enter a check in only one column for each illness.

**TERMINATION OR PERMANENT TRANSFER**—Place an asterisk to the right of the entry in columns 7a through 7g (type of illness) which represented a termination of employment or permanent transfer.

#### Totals

Add number of entries in columns 1 and 8.

Add number of checks in columns 2, 3, 6, 7, 9, 10, and 13.

Add number of days in columns 4, 5, 11, and 12.

Totals are to be generated for each column at the end of each page and at the end of each year. Only the yearly totals are required for posting.

If an employee's loss of workdays is continuing at the time the totals are summarized, estimate the number of future workdays the employee will lose and add that estimate to the workdays already lost and include this figure in the annual totals. No further entries are to be made with respect to such cases in the next year's log.

#### Definitions

**OCCUPATIONAL INJURY** is any injury, such as a cut, fracture, sprain, amputation, etc., which results from a work accident or from an exposure involving a single incident in the work environment.

**NOTE:** Conditions resulting from animal bites, such as insect or snake bites or from one-time exposure to chemicals, are considered to be injuries.

**OCCUPATIONAL ILLNESS** of an employee is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

The following listing gives the categories of occupational illnesses and disorders that will be utilized for the purpose of classifying recordable illnesses. For purposes of information, examples of each category are given. These are typical examples, however, and are not to be considered the complete listing of the types of illnesses and disorders that are to be counted under each category.

##### 7a. Occupational Skin Diseases or Disorders

Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns or inflammations; etc.

##### 7b. Dust Diseases of the Lungs (Pneumoconioses)

Examples: Silicosis, asbestosis, coal worker's pneumoconiosis, byssinosis, siderosis, and other pneumoconioses.

##### 7c. Respiratory Conditions Due to Toxic Agents

Examples: Pneumonitis, pharyngitis, trinititis or acute congestion due to chemicals, dusts, gases, or fumes; farmer's lung; etc.

##### 7d. Poisoning (Systemic Effect of Toxic Materials)

Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion, lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins; etc.

##### 7e. Disorders Due to Physical Agents (Other than Toxic Materials)

Examples: Heatstroke, sunstroke, heat exhaustion, and other effects of environmental heat; freezing, frostbite, and effects of exposure to low temperatures; caisson disease; effects of ionizing radiation (isotopes, X-rays, radium); effects of nonionizing radiation (welding flash, ultraviolet rays, microwaves, sunburn); etc.

##### 7f. Disorders Associated With Repeated Trauma

Examples: Noise-induced hearing loss; synovitis, tenosynovitis, and bursitis; Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

##### 7g. All Other Occupational Illnesses

Examples: Anthrax, brucellosis, infectious hepatitis, malignant and benign tumors, food poisoning, histoplasmosis, coccidioidomycosis, etc.

**MEDICAL TREATMENT** includes treatment (other than first aid) administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does NOT include first-aid treatment (one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care) even though provided by a physician or registered professional personnel.

**ESTABLISHMENT:** A single physical location where business is conducted or where services or industrial operations are performed (for example: a factory, mill, store, hotel, restaurant, movie theater, farm, ranch, bank, sales office, warehouse, or central administrative office). Where distinctly separate activities are performed at a single physical location, such as construction activities operated from the same physical location as a lumber yard, each activity shall be treated as a separate establishment.

For firms engaged in activities which may be physically dispersed, such as agriculture; construction; transportation; communications; and electric, gas, and sanitary services, records may be maintained at a place to which employees report each day.

Records for personnel who do not primarily report or work at a single establishment, such as traveling salesmen, technicians, engineers, etc., shall be maintained at the location from which they are paid or the base from which personnel operate to carry out their activities.

**WORK ENVIRONMENT** is comprised of the physical location, equipment, materials processed or used, and the kinds of operations performed in the course of an employee's work, whether on or off the employer's premises.

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Bureau of Labor Statistics  
 Log and Summary of Occupational  
 Injuries and Illnesses

U.S.

**NOTE:** This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain and post can result in the issuance of citations and assessment of penalties. (See posting requirements on the other side of form.)

**RECORDABLE CASES:** You are required to record information about every occupational death, every nonfatal occupational illness, and those nonfatal occupational injuries which involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid). (See definitions on the other side of form.)

Company Name  
 Establishment Name  
 Establishment Address

| Date of Injury or Onset of Illness                    | Employee's Name   | Occupation   | Department   | Description of Injury or Illness   | Extent of and Out-  |   |
|---|---|--|--|--|---|---|
|   |   |  |  |  | Fatalities  | Non-  |
| Enter Mo./day.  | Enter first name or initial, middle initial, last name. | Enter regular job title, not activity employee was performing when injured or at onset of illness. In the absence of a formal title, enter a brief description of the employee's duties. | Enter department in which the employee is regularly employed or a description of normal workplace to which employee is assigned, even though temporarily working in another department at the time of injury or illness. | Enter a brief description of the injury or illness and indicate the part or parts of body affected.<br><br>Typical entries for this column might be:<br>Amputation of 1st joint right forefinger;<br>Strain of lower back; Contact dermatitis on both hands; Electrocution—body. | Injury Related<br><br>Enter DATE of death.<br><br>Mo./day/yr<br><br>(1) | Injury<br><br>Enter DATE of death.<br><br>Mo./day/yr<br><br>(2) |
| (B)   | (C)   | (D)  | (E)  | (F)  |   |   |
| <b>PREVIOUS PAGE TOTALS</b> →                         |   |  |  |  |   |   |
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| <b>TOTALS</b> (Instructions on other side of form.) → |   |  |  |  |   |   |

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Page \_\_\_\_\_ of \_\_\_\_\_

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POST ONLY THIS PORTION OF THE LAST PAGE NO LATER THAN FEBRUARY 1.

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## Instructions for OSHA No. 200

### and Summary of Occupational Injuries and Illnesses

Each employer who is subject to the recordkeeping requirements of the Occupational Safety and Health Act of 1970 must maintain for each establishment a log of all recordable occupational injuries and illnesses. This form (OSHA No. 200) may be used for that purpose. A substitute for the OSHA No. 200 is acceptable if it is as detailed, easily readable, and understandable as the OSHA No. 200.

Enter each recordable case on the log within six (6) workdays after learning of its occurrence. Although other records must be maintained at the establishment to which they refer, it is possible to prepare and maintain the log at another location, using data processing equipment if desired. If the log is prepared elsewhere, a copy updated to within 45 calendar days must be present at all times in the establishment.

Logs must be maintained and retained for five (5) years following the end of the calendar year to which they relate. Logs must be available (normally at the establishment) for inspection and copying by representatives of the Department of Labor, or the Department of Health, Education and Welfare, or States accorded jurisdiction under the Act.

#### Changes in Extent of or Outcome of Injury or Illness

If, during the 5-year period the log must be retained, there is a change in an extent and outcome of an injury or illness which affects entries in columns 1, 2, 6, 8, 9, or 13, the first entry should be lined out and a new entry made. For example, if an injured employee at first required only medical treatment but later lost workdays away from work, the check in column 6 should be lined out, and checks entered in columns 2 and 3 and a number of lost workdays entered in column 4.

In another example, if an employee with an occupational illness lost workdays, returned to work, and then died of the illness, the entries in columns 9 and 10 should be lined out and the date of death entered in column B.

The entire entry for an injury or illness should be lined out if later found to be nonrecordable. For example: an injury or illness which is later determined not to be work related, or which was initially thought to involve medical treatment but later was determined to have involved only first aid.

#### I. Posting Requirements

A copy of the totals and information following the fold line of the last page for the year must be posted at each establishment in the place or places where notices to employees are customarily posted. This copy must be posted no later than *February 1 and must remain in place until March 1*.

Even though there were no injuries or illnesses during the year, zeros must be entered on the totals line, and the form posted.

The person responsible for the *annual summary totals* shall certify that the totals are true and complete by signing at the bottom of the form.

#### Instructions for Completing Log and Summary of Occupational Injuries and Illnesses

Column A — CASE OR FILE NUMBER. Self-explanatory.

#### Column B — DATE OF INJURY OR ONSET OF ILLNESS.

For occupational injuries, enter the date of the work accident which resulted in injury. For occupational illnesses, enter the date of initial diagnosis of illness, or, if absence from work occurred before diagnosis, enter the first day of the absence attributable to the illness which was later diagnosed or recognized.

Columns C through F — Self-explanatory.

Columns 1 and 8 — INJURY OR ILLNESS-RELATED DEATHS. Self-explanatory.

Columns 2 and 9 — INJURIES OR ILLNESSES WITH LOST WORKDAYS. Self-explanatory.

Any injury which involves days away from work, or days of restricted work activity, or both must be recorded since it always involves one or more of the criteria for recordability.

Columns 3 and 10 — INJURIES OR ILLNESSES INVOLVING DAYS AWAY FROM WORK. Self-explanatory.

Columns 4 and 11 — LOST WORKDAYS—DAYS AWAY FROM WORK.

Enter the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness. The number of workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

NOTE: For employees not having a regularly scheduled shift, such as certain truck drivers, construction workers, farm labor, casual labor, part-time employees, etc., it may be necessary to estimate the number of lost workdays. Estimates of lost workdays shall be based on prior work history of the employee AND days worked by employees, not ill or injured, working in the department and/or occupation of the ill or injured employee.

Columns 5 and 12 — LOST WORKDAYS—DAYS OF RESTRICTED WORK ACTIVITY.

Enter the number of workdays (consecutive or not) on which because of injury or illness:

- (1) the employee was assigned to another job on a temporary basis, or
- (2) the employee worked at a permanent job less than full time, or
- (3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

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## OSHA Field Locations

(Includes addresses and telephone numbers for OSHA Regional Offices and cities in which other offices are located. Complete information on field locations may be obtained from any OSHA Regional Office.)

**Region 1:** Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

JFK Federal Building  
Room 1804 - Government Center  
Boston, Massachusetts 02203  
Phone: 617-223-6712

### Area offices:

Hartford, Connecticut  
Springfield, Massachusetts  
Waltham, Massachusetts  
Concord, New Hampshire

### District office:

Providence, Rhode Island

**Region 2:** New York, New Jersey, Puerto Rico, Virgin Islands, Canal Zone

1515 Broadway - Room 3445  
New York, New York 10036  
Phone: 212-399-5754

### Area offices:

Jersey Beach, New Jersey  
Camden, New Jersey  
Crown, New Jersey  
Hoboken Heights, New Jersey  
Newark, New Jersey  
Albany, New York  
Brooklyn, New York  
Buffalo, New York  
Flushing, New York  
New York, New York  
Rochester, New York  
Syracuse, New York  
Westbury, New York  
White Plains, New York  
Hato Rey, Puerto Rico

**Region 3:** Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia

Gateway Building - Suite 2100  
3535 Market Street  
Philadelphia, Pennsylvania 19104  
Phone: 215-596-1201

### Area offices:

Washington, D.C.  
Baltimore, Maryland  
Harrisburg, Pennsylvania  
Philadelphia, Pennsylvania  
Pittsburgh, Pennsylvania  
Wilkes Barre, Pennsylvania  
Richmond, Virginia  
Charleston, West Virginia

### District offices:

Wilmington, Delaware  
Norfolk, Virginia

### Field stations:

Allentown, Pennsylvania  
Johnstown, Pennsylvania  
Lancaster, Pennsylvania  
Lebanon, Pennsylvania  
State College, Pennsylvania  
Falls Church, Virginia  
Roanoke, Virginia  
Staatsville, West Virginia  
Wheeling, West Virginia

**Region 4:** Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee

1375 Peachtree Street, NE - Suite 567  
Atlanta, Georgia 30309  
Phone: 404-521-3573

### Area offices:

Birmingham, Alabama  
Mobile, Alabama  
Fort Lauderdale, Florida  
Jacksonville, Florida  
Tampa, Florida  
Macon, Georgia  
Savannah, Georgia  
Tucker, Georgia  
Louisville, Kentucky  
Jackson, Mississippi  
Raleigh, North Carolina  
Columbia, South Carolina  
Nashville, Tennessee

### Field stations:

Anniston, Alabama  
Huntsville, Alabama  
Montgomery, Alabama  
Sheffield, Alabama  
Pensacola, Florida  
Tallahassee, Florida  
Gulfport, Mississippi  
Charleston, South Carolina

**Region 5:** Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

230 South Dearborn Street - Room 3263  
Chicago, Illinois 60604  
Phone: 312-353-2220

### Area offices:

Calumet City, Illinois  
Niles, Illinois  
North Aurora, Illinois  
Peoria, Illinois  
Indianapolis, Indiana  
Detroit, Michigan  
Minneapolis, Minnesota  
Cincinnati, Ohio  
Cleveland, Ohio  
Columbus, Ohio  
Toledo, Ohio  
Appleton, Wisconsin  
Milwaukee, Wisconsin

### District offices:

Bellefonte, Illinois  
Eau Claire, Wisconsin  
Madison, Wisconsin

**Region 6:** Arkansas, Louisiana, New Mexico, Oklahoma, Texas

595 Griffin Square Building - Room 602  
Dallas, Texas 75202  
Phone: 214-749-2477/3651

### Area offices:

Little Rock, Arkansas  
Baton Rouge, Louisiana  
New Orleans, Louisiana  
Albuquerque, New Mexico  
Oklahoma City, Oklahoma  
Tulsa, Oklahoma  
Austin, Texas  
Dallas, Texas  
Fort Worth, Texas  
Houston, Texas  
Irving, Texas  
Lubbock, Texas  
San Antonio, Texas  
Tyler, Texas

### District office:

Corpus Christi, Texas

### Field stations:

Shreveport, Louisiana  
Beaumont, Texas  
El Paso, Texas

**Region 7:** Iowa, Kansas, Missouri, Nebraska

911 Walnut Street - Room 3000  
Kansas City, Missouri 64106  
Phone: 816-374-5001

### Area offices:

Des Moines, Iowa  
Wichita, Kansas  
Kansas City, Missouri  
St. Louis, Missouri  
North Platte, Nebraska  
Omaha, Nebraska

**Region 8:** Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

1961 Stout Street - Room 1501J  
Denver, Colorado 80294  
Phone: 303-437-3803

### Area offices:

Lakewood, Colorado  
Billings, Montana  
Bismarck, North Dakota  
Sioux Falls, South Dakota  
Salt Lake City, Utah

**Region 9:** Arizona, California, Hawaii, Nevada, Guam, American Samoa, Trust Territory of the Pacific Islands

450 Golden Gate Avenue - Room 402  
Post Office Box 36017  
San Francisco, California 94102  
Phone: 415-556-0566

### Area offices:

Phoenix, Arizona  
Long Beach, California  
San Francisco, California  
Honolulu, Hawaii

### Field stations:

Tucson, Arizona  
Fresno, California  
Sacramento, California  
Las Vegas, Nevada

**Region 10:** Alaska, Idaho, Oregon, Washington

Federal Building - Room 227  
909 First Avenue  
Seattle, Washington 98104  
Phone: 206-442-5910

### Area offices:

Anchorage, Alaska  
Boise, Idaho  
Portland, Oregon  
Bellevue, Washington

### Field stations:

Coeur d'Alene, Idaho  
Leviston, Idaho  
Pocatello, Idaho

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## Participating State Statistical Agencies

- Alabama Department of Labor  
600 Administrative Building  
Montgomery, Alabama 36130  
Phone: 205-832-6270
- \* Alaska Department of Labor  
Research and Analysis Section  
Post Office Box 3-7000  
Juneau, Alaska 99802  
Phone: 907-465-4500
- American Samoa Department of  
Manpower Resources  
Pago Pago, American Samoa 96799  
Phone: 633-6485
- \* Arizona Industrial Commission  
Post Office Box 19070  
Phoenix, Arizona 85015  
Phone: 602-271-5559
- Arkansas Department of Labor  
OSH Statistics - Room 407  
1515 West Seventh Street  
Little Rock, Arkansas 72202  
Phone: 501-371-2770
- \* California Department of  
Industrial Relations  
Labor Statistics and Research  
Post Office Box 603  
San Francisco, California 94904  
Phone: 415-557-3317
- \* Colorado Department of Labor and  
Employment  
Division of Labor  
1313 Sherman  
Denver, Colorado 80203  
Phone: 303-839-3748
- \* Connecticut Department of Labor  
200 Folly Brook Boulevard  
Wethersfield, Connecticut 06109  
Phone: 203-566-4370
- District of Columbia Minimum Wage  
and Industrial Safety Board  
Industrial Safety Division  
2900 Newton Street, N.E. - 1st Flr.  
Washington, D.C. 20018  
Phone: 202-832-1572
- Delaware Department of Labor  
Division of Industrial Affairs  
618 No. Union Street  
Wilmington, Delaware 19805  
Phone: 302-571-2879
- Florida Department of Commerce  
Division of Labor - Room 206  
1321 Executive Center Drive, East  
Tallahassee, Florida 32301  
Phone: 904-488-5837
- Guam Department of Labor  
Post Office Box 2950  
Agaña, Guam 96910  
Phone: 477-9820-9
- \* Hawaii Department of Labor  
and Industrial Relations  
825 Millilani Street  
Honolulu, Hawaii 96813  
Phone: 808-548-6398
- Idaho Industrial Commission  
317 Main Street  
Boise, Idaho 83702  
Phone: 208-384-2193
- \* Indiana Division of Labor  
Department of Statistics, IOSHA  
100 No. Senate Avenue - Room 1013  
Indianapolis, Indiana 46204  
Phone: 317-633-4473
- \* Iowa Bureau of Labor  
East Seventh and Walnut  
Des Moines, Iowa 50319  
Phone: 515-281-3606
- Kansas Department of Health and  
Environment  
Forbes Air Force Base - Bldg. 740  
Topeka, Kansas 66620  
Phone: 313-562-9346
- \* Kentucky Department of Labor  
Research and Statistics Division  
151 Elkhorn Court  
Frankfort, Kentucky 40601  
Phone: 502-564-3100
- Louisiana Department of Employment  
Security, Research and Statistics-OSH  
1001 North 23rd and Poyou  
Baton Rouge, Louisiana 70804  
Phone: 504-339-5647
- Maine Department of Manpower Affairs  
Division of Research Statistics  
State Office Building - 2nd Flr.  
Augusta, Maine 04333  
Phone: 207-289-3331
- \* Maryland Department of Licensing  
and Regulation  
Division of Labor and Industry  
203 E. Baltimore Street  
Baltimore, Maryland 21202  
Phone: 301-383-2364
- Massachusetts Department of Labor  
and Industries  
Division of Statistics  
100 Cambridge Street  
Boston, Massachusetts 02202  
Phone: 617-727-3596
- \* Michigan Department of Labor  
Injury Analysis Division  
7150 Harris Drive  
Lansing, Michigan 48926  
Phone: 517-373-9650
- \* Minnesota Department of Labor and  
Industry  
444 Lafayette Road  
Saint Paul, Minnesota 55101  
Phone: 612-296-3947
- Mississippi State Board of Health  
Occupational Safety and Health  
2628 Southerland Street  
Jackson, Mississippi 39216  
Phone: 601-982-6315
- Missouri Division of Worker's  
Compensation  
Post Office Box 58  
Jefferson City, Missouri 65101  
Phone: 314-751-4231
- Montana Department of Labor and  
Industry  
Worker's Compensation Division  
815 Front Street  
Helena, Montana 59601  
Phone: 406-449-2994
- Nebraska Worker's Compensation Court  
Post Office Box 94845  
Lincoln, Nebraska 68509  
Phone: 402-471-2568
- \* Nevada Industrial Commission  
515 E. Musser Street  
Carson City, Nevada 89714  
Phone: 702-885-5240
- New Jersey Department of Labor  
and Industry  
Division of Planning and Research  
Post Office Box 359  
Trenton, New Jersey 08625  
Phone: 609-292-2643
- \* New Mexico Health and Social  
Services Department - SIA  
Post Office Box 2348  
Santa Fe, New Mexico 87503  
Phone: 505-827-5271
- New York Department of Labor  
Division of Research and Statistics  
2 World Trade Center  
New York, New York 10047  
Phone: 512-457-2727
- \* North Carolina Department of Labor  
Division of Statistics  
4 West Edenton Street  
Raleigh, North Carolina 27601  
Phone: 919-733-4940
- Ohio Department of Industrial  
Relations  
2322 West 5th Avenue  
Post Office Box 425  
Columbus, Ohio 43216  
Phone: 614-466-7520
- \* Oregon Worker's Compensation  
Board  
OSH/BLS Statistics Section  
Labor and Industries Building  
Room 108  
Salem, Oregon 97310  
Phone: 503-378-8254
- Pennsylvania Department of Labor  
and Industry  
OSH Statistics  
7th and Forster Streets  
Harrisburg, Pennsylvania 17120  
Phone: 717-787-1918
- \* Puerto Rico Department of Labor  
Bureau of Labor Statistics  
414 Barbosa Avenue  
Hato Rey, Puerto Rico 00917  
Phone: 809-765-1970
- Rhode Island Department of Labor  
Division of Statistics  
235 Promenade Street  
Providence, Rhode Island 02908  
Phone: 401-277-2731
- \* South Carolina Department of Labor  
Division of Research and Statistics  
Post Office Drawer 11329  
Columbia, South Carolina 29211  
Phone: 803-758-8507
- South Dakota Department of Health  
Division of Public Health Statistics  
Foss Building  
Pierre, South Dakota 57501  
Phone: 605-224-3355
- \* Tennessee Department of Labor  
Division of Research and Statistics  
501 Union Building  
Suite F, 2nd Floor  
Nashville, Tennessee 37219  
Phone: 615-741-1748
- Texas Department of Health  
Division of Occupational Safety  
1100 West 49th Street  
Austin, Texas 78756  
Phone: 512-454-1721
- \* Utah Industrial Commission  
OSH Statistical Division  
448 South 4th East  
Salt Lake City, Utah 84111  
Phone: 801-533-6401
- \* Vermont Department of Labor and  
Industry  
State Office Building  
Montpelier, Vermont 05602  
Phone: 802-823-2266
- \* Virgin Islands Department of Labor  
Post Office Box 148  
St. Thomas, Virgin Islands 00801  
Phone: 809-774-3650
- \* Virginia Department of Labor and  
Industry  
Post Office Box 12064  
Fifth Street Office Building  
Richmond, Virginia 23241  
Phone: 804-786-2344
- \* Washington Department of Labor  
and Industries  
Industrial Safety and Health  
Post Office Box 2569  
Olympia, Washington 98504  
Phone: 206-753-5500
- West Virginia Department of Labor  
1900 Washington Street, East  
Charleston, West Virginia 25305  
Phone: 304-348-7890
- Wisconsin Department of Industry,  
Labor and Human Relations  
201 E. Washington Avenue  
Madison, Wisconsin 53707  
Phone: 608-266-7559
- \* Wyoming Department of Labor and  
Statistics  
Division of Research and Statistics  
Barrett Building, 4th Floor  
Cheyenne, Wyoming 82002  
Phone: 307-777-7261

\* As of January 1, 1978, a State safety and health plan under section 16(b) of the Act was in operation. This agency may be contacted directly for specific information regarding regulations in the State.

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### Retention of Records

All records must remain in the establishment for five (5) years after the year to which they relate. If an establishment changes ownership, the new employer must preserve the records for the remainder of the five-year period. He is not responsible, however, for updating records of the former owner.

### Poster

Each employer must display in each establishment a poster which explains the protections and obligations of employees under the Occupational Safety and Health Act. States which have approved plans will require that a State poster be displayed. For further information about such requirements, consult any of the OSHA offices or the State statistical agencies (addresses and telephone numbers appear on pages 3 and 4). The order form which appears on the inside back cover of this booklet may be used to order posters. Employers using the form will be supplied with all necessary posters, including State posters, when they must be used in addition to the Federal poster.

### Reporting of Fatality or Multiple Hospitalization Accidents

An employer must report any accident which results in one (1) or more deaths or in hospitalization of five (5) or more employees. The report must be made within 48 hours after the accident and can be made orally or in writing. It must be made to the Area Director of the Occupational Safety and Health Administration, except for States with approved State plans. In States which have approved plans, the report shall be made to the State agency which has enforcement responsibilities under the plan. Further information may be obtained from the OSHA Regional Offices (see addresses and telephone numbers on page 3).

### Access to Records

Records can be inspected and copied at any reasonable time by authorized Federal or State government representatives. As of the time of printing this booklet, OSHA is considering a provision for affording employee access to the Log and Summary of Occupational Injuries and Illnesses (OSHA No. 200). If this provision is adopted by OSHA, employers shall comply with its terms in making the log available to employees and their representatives at reasonable times.

### Periodic Reports of Injuries and Illnesses

If an establishment is selected to participate in a survey of occupational injuries and illnesses, it will be mailed a report form at the proper time.

### Where to Obtain OSHA Recordkeeping Forms

Recordkeeping forms will not be automatically mailed to employers each year. To request additional forms, use the order blank on the inside back cover of this booklet.

### Recordkeeping Under Worker's Compensation and OSHA

OSHA recordkeeping and reporting requirements differ from those established under the various State worker's compensation laws. Because they differ, employers must not substitute worker's compensation criteria in determining whether or not a case should be recorded for OSHA. Worker's compensation rules may require employers to record more or fewer cases than the OSHA rules. For example, worker's compensation laws in some States require an injury to be reported only if it results in at least two (2) lost workdays. In other States, any injury which requires a visit to a doctor must be recorded, regardless of its severity. These examples differ from the OSHA definition of a recordable case. Employers which are using State first report forms as a substitute for the supplementary record (OSHA No. 101) must prepare a form for each OSHA recordable case whether or not the State worker's compensation law requires that a report be prepared.

### Order Form

Booklets and forms can be obtained by completing the order form below and mailing it to the appropriate State statistical agency (if there is one in your state) or to the nearest Regional Office of the Bureau of Labor Statistics.

-----  
ADDRESS LABEL  
Type or Print

FROM: Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Street Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_

Please send me the following items at no charge:

\_\_\_\_\_ Recordkeeping Booklets  
\_\_\_\_\_ Log and Summary of Occupational Injuries and Illnesses (OSHA No. 200)  
\_\_\_\_\_ Supplementary Record of Occupational Injuries and Illnesses (OSHA No. 101)  
\_\_\_\_\_ Poster: Job Safety and Health Protection

U.S. Department of Labor  
Bureau of Labor Statistics  
Washington, D.C. 20212

Office at Business  
Penalty for private use, \$300

Postage and Fees Paid  
U.S. Department of Labor  
First Class Mail



Lab-441

### United States Department of Labor Bureau of Labor Statistics-Regional Offices

Region 1-Boston  
1603-A Federal Office Building  
Boston, Massachusetts 02203  
Phone: 617-223-4533  
Connecticut  
Maine  
Massachusetts  
New Hampshire  
Rhode Island  
Vermont

Region 2-New York  
1515 Broadway  
New York, New York 10036  
Phone: 212-662-5245  
New Jersey  
New York  
Puerto Rico  
Virgin Islands

Region 3-Philadelphia  
Post Office Box 13309  
Philadelphia, Pennsylvania 19101  
Phone: 215-596-1162  
Delaware  
District of Columbia  
Maryland  
Pennsylvania  
Virginia  
West Virginia

Region 4-Atlanta  
1371 Peachtree Street, N.E.  
Atlanta, Georgia 30309  
Phone: 404-881-3660  
Alabama Mississippi  
Florida North Carolina  
Georgia South Carolina  
Kentucky Tennessee

Region 5-Chicago  
Post Office Box 2145  
Chicago, Illinois 60690  
Attn: OSHA Forms  
Phone: 312-353-1880  
Illinois  
Indiana  
Michigan  
Minnesota  
Ohio  
Wisconsin

Region 6-Dallas  
555 Griffin Square Building  
2nd Floor  
Dallas, Texas 75202  
Phone: 214-749-1781  
Arkansas  
Louisiana  
New Mexico  
Oklahoma  
Texas

Regions 7 and 8-Kansas City  
and Denver  
Federal Office Building  
911 Walnut Street  
Kansas City, Missouri 64106  
Phone: 816-374-3685  
Colorado Nebraska  
Iowa North Dakota  
Kansas South Dakota  
Missouri Utah  
Montana Wyoming

Regions 9 and 10-San Francisco  
and Seattle  
450 Golden Gate Avenue  
Box 36017  
San Francisco, California 94102  
Phone: 415-556-8980  
Alaska Idaho  
Arizona Nevada  
California Oregon  
Hawaii Washington

Employers: This booklet contains information about important responsibilities under the Occupational Safety and Health Act of 1970. It also contains forms needed to prepare required occupational injury and illness records.

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**McKesson**  
**Operations**

| Section  | Reference  | Page           | End |
|--|------------|----------------|-----|
| GENERAL SAFETY                                 | 10.60      | 1              |     |
| Subject  | Issue Date | Effective Date |     |
| GENERAL INDUSTRIAL SAFETY ORDERS<br>(CAL/OSHA) | 9/15/85    | 9/15/85        |     |

INTRO-  
DUCTION

Although the following are extracted from CAL/OSHA (the California program which pre-empts OSHA), they are included in this manual because they are similar to OSHA standards and are basic to any good safety program. They should be used as guidelines in all safety operations at McKesson Chemical locations.

ACCIDENT  
PREVENTION  
PROGRAM

On March 23, 1977, the Occupational Safety and Health Standards Board adopted a LANDMARK standard, General Industry Standard 3203. It reads as follows:

3203. Accident Prevention Program

- (a) Every employer shall inaugurate and maintain an accident prevention program which shall include, but not be limited to, the following:
1. A training program designed to instruct employees in general safe work practices plus specific instruction, with regard to hazards unique to any job assignment.
  2. Scheduled periodic inspections to identify and correct any unsafe conditions and work practices which may be found.

"instruct employees in general safe work practices"

is interpreted to mean work practices that are generally applicable to most employees throughout the worksite.

Examples of General Safe Work Practices might include:

- lifting procedures
- use of proper personal protective equipment
- knowledge of exits
- medical and first-aid procedures
- housekeeping practices
- use of fire extinguishers
- evacuation plans
- storage and handling of flammables

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**McKesson**  
**Operations**

| Section  | Reference  | Page           | End |
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ACCIDENT  
PREVENTION  
PROGRAM  
(Cont.)

"specific instruction with regard to hazards unique to any job assignment"

is interpreted to mean training on the hazards and safe work practices specific to an individual employee's work assignment.

IMPLEMEN-  
TATION

Effective implementation of a total accident prevention program involves the following seven basic elements:

1. Management leadership. The top authority must:
  - a. Assume responsibility for the prevention of accidents and illnesses.
  - b. Support a written safety and health policy.
  - c. Publicize and identify itself with the stated safety and health policy.
  - d. Demonstrate support of the safety and health program by active participation and cooperation.
2. Assignment of Responsibility. The authority must make it clearly understood that:
  - a. Accident and Illness Prevention is an assigned responsibility for all employees at every level, equal to any other work responsibility.
  - b. All supervisors will be accountable to top management for injuries or illnesses to their subordinates.
  - c. The prevention of accidents and illnesses is a line responsibility.

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| Section  | Reference  | Page           | End |
|--|------------|----------------|-----|
| GENERAL SAFETY                                 | 10.60      | 3              |     |
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| GENERAL INDUSTRIAL SAFETY ORDERS<br>(CAL/OSHA) | 9/15/85    | 9/15/85        |     |

IMPLEMEN-  
TATION  
(Cont.)

3. Maintenance of Safe and Healthful Working Conditions. Management must:

- a. Establish a system of periodic inspection of work areas to identify and correct any unsafe conditions and work practices which may be found. This is most effectively done with safety committees that have employee participation.
- b. Establish effective training programs (See #4a. & b.)
- c. Establish a system of procurement and use of personal protective equipment.
- d. Establish standards of housekeeping and work conditions in each section and review of periodic reports on conditions by management.

4. Safety Education Program. Management must insist on:

- a. A training program designed to instruct employees in general safe work practices.
- b. A training program designed to instruct employees in specific instruction with regard to hazards unique to any job assignment.
- c. Establishment of safety and health training for supervisors in conjunction with other management training programs.
- d. Instruction for supervisors on the "how" of accident and illness prevention by use of training films, seminars and private consultants (budget permitting).
- e. Instruction for supervisors on minimum safety and health requirements for proper work methods and equipment.

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**McKesson**  
**Operations**

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| GENERAL INDUSTRIAL SAFETY ORDERS<br>(CAL/OSHA) | 9/15/85    | 9/15/85        |     |

IMPLEMEN-  
TATION  
(Cont.)

5. Accident Reporting System and Evaluation.

- a. Document periodic inspections and corrective measures taken.
- b. Document training activities, length of instruction, how often instruction is given, and employee use of instruction.
- c. Accident reports completed by supervisors and forwarded to superiors with recommendation for prevention of recurrence.
- d. Periodic reports and analyses of accident and illness experiences reviewed by management to determine accident trends; areas where there should be additional emphasis on safety; the effectiveness of the program; and whether to establish or revise goals.

6. Medical Services and First Aid (GISO 3400).

- a. Post emergency information. The phone numbers of the closest ambulance service, fire/rescue unit, police station, and hospital should be posted by telephones. The amount of time it takes to look up one of these important numbers can make a big difference to a seriously injured person.
- b. Provide adequate first aid equipment and supplies. First aid equipment and supplies, including a variety of dressings and instruments, as well as an up-to-date first aid manual, should be stored where they can be reached quickly and easily in case of an accident. Larger workplaces may need more than one fully equipped first aid chest.

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**McKesson**  
**Operations**

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| GENERAL INDUSTRIAL SAFETY ORDERS<br>(CAL/OSHA) | 9/15/85    | 9/15/85        |     |

IMPLEMEN-  
TATION  
(Cont.)

7. Acceptance of Personal Responsibility by All Employees. Management must obtain employee support by means of:
  - a. Instruction and training in safe and healthful job procedures and practices.
  - b. Continuing practices of making employees aware of safety and health program through posters, bulletins and discussions with supervisors.
  - c. Continuing awareness of management's support of the safety and health program.

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**McKesson**  
**Operations**

| Section   | Reference  | Page           | End |
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| GENERAL SAFETY  | 10.65      | 1              |     |
| Subject   | Issue Date | Effective Date |     |
| SUPPLIER ASSISTANCE, TECHNICAL RESOURCES & STEWARDSHIP PROGRAMS | 9/15/85    | 9/15/85        |     |

**GENERAL**

An important aspect to our relationship with suppliers is their capability to lend us assistance in various ways. Suppliers normally have resources, expertise, and an interest in seeing that their products are handled safely and properly. Understanding that this valuable assistance is available to us to improve our operations and support sales efforts, we can greatly extend our capabilities in these areas by using supplier:

1. Assistance

Besides regular sales assistance with our customers, suppliers can normally furnish such items as:

- MSDS -- Material Safety Data Sheets
- Technical Bulletins
- Handling Data, Wall Charts, etc.
- Formulations & User Information

2. Technical Resources

Adding to our technical strengths, suppliers can assist us in such areas as:

- Mechanical/handling experience
- Materials of construction for tanks, lines, etc.
- Container recommendations
- Blending, diluting advice
- Testing, quality control

**MKIL40281**

MK094691

**MKIL189282**

**McKesson**  
**Operations**

| Section   | Reference  | Page           | End |
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| GENERAL SAFETY  | 10.65      | 2              | X   |
| Subject   | Issue Date | Effective Date |     |
| SUPPLIER ASSISTANCE, TECHNICAL RESOURCES & STEWARDSHIP PROGRAMS | 9/15/85    | 9/15/85        |     |

GENERAL  
(Cont.)

3. Safety & Emergency Response

Various special programs are in effect to lend assistance in safety matters and respond to chemical emergencies -- for example:

- DuPont Rhythm -- guides in transportation emergency response, training, and literature.
- Chlorine Institute/CHLOREP -- chlorine emergency help from chlorine producers and repackagers by zones; also with seminars & booklet.
- CHEMTREC -- by Manufacturing Chemists Association for round-the-clock notification and assistance in transportation emergencies @ 800-424-9300.
- Union Carbide Help Line is also manned 24 hrs/day for advice on their chemicals @ 304-744-3487.

4. Stewardship Emphasis

Most responsible suppliers maintain a stewardship interest in their products from manufacturing through customer use of the product.

An outstanding example of this effort is Dow's Product Stewardship Program. This program involves a survey of distributor locations, an audit visit by technical staff, followed by an analysis and set of recommendations for each location.

Other suppliers have their own versions of stewardship help available to us. Due to complexities of agreements, proprietary information, and competitive situations, Service Centers should consult their Area and Regional Operations in requesting this help and possibly Regional Marketing in the case of new suppliers.

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**McKesson**  
**Operations**

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| GENERAL SAFETY | 10.66      | 1              |     |
| Subject        | Issue Date | Effective Date |     |
| CYANIDE POLICY | 10/15/86   | 10/15/86       |     |

**POLICY** It is the policy of McKesson Chemical to sell cyanides only to technically qualified and approved industrial users.

**PROCEDURES** Cyanides will be handled in accordance with the following procedures:

1. McKesson will not repackage cyanides.
2. McKesson will **not** provide cyanide samples to anyone. All requests for samples must be submitted to the appropriate supplier.
3. Only Service Centers with authorization can purchase cyanides (Exhibit 1). "Offline" purchasing of cyanides from suppliers, or other McKesson Service Centers is not permitted.
4. All **new** cyanide accounts will be pre-qualified through an inspection by McKesson's Area or Regional Operations personnel or designee **and** the manufacturer's representative. The inspection will occur before the first shipment in order to determine whether the customer is a technically qualified industrial user.
5. Prospective customers will be provided with:
  - a. all current and applicable technical and safety literature provided to McKesson by the manufacturer;
  - b. a McKesson Material Safety Data Sheet for the product;
  - c. a letter of transmittal (Exhibit 2), from McKesson.
6. Shipment can be made only after McKesson has received back a signed copy of the letter of transmittal (Exhibit 2).

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| CYANIDE POLICY | 10/15/86   | 10/15/86       |     |

PROCEDURES  
(Cont.)

7. Under no circumstances will McKesson sell cyanides "over the counter" for cash or to non-approved customers.
8. In the event that the news media request information on our cyanide sales and/or procedures, the Service Center Manager may discuss our policy and practices presented here. Further inquiries should be referred to Home Office Operations and Corporate Public Relations in San Francisco.

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SERVICE CENTERS AUTHORIZED TO HANDLE CYANIDES  
7/3/86

CENTRAL

Appleton  
Bloomington  
Burlington  
Chicago Heights  
Cincinnati  
Cleveland  
Kansas City  
Milwaukee  
Minneapolis  
Omaha  
St. Louis  
Schaumburg  
Wichita

EASTERN

Albany  
Altoona  
Geismar  
Lafayette  
Little Rock  
Philadelphia

WESTERN

Albuquerque  
Carlin  
Denver  
Grand Junction  
Los Angeles  
Oklahoma City  
Orange County  
Phoenix  
Riverside  
San Francisco  
Tucson

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Customer's Name  
Address

Date

Dear \_\_\_\_\_:

Here is the safe handling literature that McKesson's representative promised to send you during your recent conversation. This includes the McKesson Material Safety Data Sheet and all current and applicable technical literature provided to McKesson by the manufacturer. Your careful review of this information would be much appreciated.

Cyanides require special care and attention and all personnel handling these products should be familiar with proper handling procedures. The procedures for proper handling contained in these publications are suggested as minimum safety procedures. They are intended for use by persons having technical skills and for use at their own discretion and risk. To assure us that you agree and that, as a minimum, you will acquaint your employees and any others who might handle these products with these handling procedures, we ask that you have this letter signed by an authorized official of your company and return a copy to this office.

Your interest in cyanides is very much appreciated. If additional help is needed, please contact us.

Sincerely,

Accepted: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Enclosures

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**Operations**

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| GENERAL SAFETY               | 10.70      | 1              |     |
| Subject                      | Issue Date | Effective Date |     |
| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

**SUMMARY**

Many chemicals present no hazard in normal handling and storage. When there is danger, however, materials can be handled and stored safely if the hazardous properties of each are known and the necessary precautions are observed. Many risks can be avoided by (1) the use of precautionary information on the labels of these materials; (2) proper safeguards; and (3) personal protective equipment. This is intended primarily as a guide to the safe storing and handling procedures of hazardous materials since each chemical has its own specific physical properties and reactivity which together determine its potential hazards.

Potentially hazardous materials can be grouped under six basic headings:

1. Toxic or poisonous (including pesticides)
2. Corrosives (including irritants)
3. Flammables and combustibles
4. Oxidizers
5. Materials sensitive to shock or impact
6. Radioactive materials (Because of the special characteristics of this group, it will not be discussed in this subject.)

Each group presents its own specific problems, as does each chemical within the group. For instance, a chemical such as hydrocyanic acid is both poisonous and flammable in some concentrations. Regardless of into what group a hazardous chemical falls, some overall precautions should be taken. For example, safety showers and eye-wash fountains should be available to persons handling materials in any of the five groups, and fire blankets should be available when handling chemicals in group #3, #4, and #5. Another overall precautionary measure is a knowledge of the information on the container labels of dangerous materials.

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| Subject                      | Issue Date | Effective Date |     |
| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

**LABELS**

One of the most important and often neglected aspects of safe storage and handling is reading the label. Labels containing precautionary information stem from a set of principles devised by trade groups and are used widely by chemical manufacturers and packagers.

Label information should be read, as far as practical, by all your employees having anything to do with handling hazardous chemicals. Precautionary labels are designed to be used in addition to, or in combination with, legal requirements. For instance, the Department of Transportation requires all regulated dangerous articles shipped in interstate commerce (unless specifically exempted) to be labeled and color-coded as designated by the commission. This is done to assure proper loading and handling en route to protect carrier personnel and the public.

In addition, with the advent of "Right-to-Know" laws on both the Federal and state levels, the cautionary information on labels of hazardous chemicals will become more and more detailed and explicit.

Precautionary labeling information, however, cannot detail completely the properties of chemicals nor can it specify handling procedures under all conditions. Moreover, it cannot be considered an adequate substitute for either the safety education of employees or the use of proper safety clothing and equipment and control measures such as local exhaust ventilation.

**HAZARDOUS  
PROPERTIES**

In addition to the information reflecting the hazardous properties of chemicals as sometimes shown on labels of shipping containers, you should have a knowledge of three basic measures of hazard for each dangerous material you use. They are:

- (1) Explosive limits, i.e., the minimum and maximum proportions of vapor or gas of a flammable material in air within which mixtures of the vapor with air can explode. The proportions are usually expressed in percentage by volume of gas or vapor in air.

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| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

HAZARDOUS  
PROPERTIES  
(Cont.)

- (2) Flash point (closed cup, open cup, or both), i.e., the temperature at which flammable liquid gives off enough vapor, when mixed with air, to produce a flame if a source of ignition is brought close enough to the surface of the liquid (open cup) or within the container (closed cup). Though the term applies to flammable liquids, certain solids (e.g., camphor) which evaporate slowly at ordinary room temperature have flash points while still in the solid state.
- (3) Threshold limit or permissible exposure, i.e., the maximum concentration of mist, vapor, or dust in the air considered harmless and unobjectionable to most people under continuous exposure (8 hours a day, 5 days a week). It is expressed in parts per million (PPM) for vapor, milligrams per cubic meter ( $\text{Mg}/\text{M}^3$ ) for dusts, fumes, and mists, and million particles per cubic foot (Mppcf) for mineral and nonmetallic inorganic dusts.

TOXIC  
CHEMICALS  
OR POISONS

Frequency of exposure, duration, concentration and method of attack on the body determine the potential hazard of any given poisonous or toxic chemical. Exposure may be to dusts, fumes, mists, vapors, liquids, solids, or gases. Injury may be caused by penetration of the skin, or by breathing contaminated air. Injury by swallowing should not occur if proper precautions are taken in storage and labeling.

When working with toxic chemicals, it is important that average air concentrations be maintained below the recommended threshold limit value; for example, for carbon tetrachloride, below 20 parts per million parts of air by volume and for benzene, below 1 ppm.

Some chemicals are absorbed readily through the skin, causing injury. Examples include amines such as aniline; many nitro compounds such as nitrobenzene; inorganic cyanides such as sodium cyanide; and certain organic cyanides such as methyl cyanide (acetonitrile).

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**Operations**

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| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

TOXIC  
CHEMICALS  
OR POISONS  
(Cont.)

Thus, in any control program, precautions must take into consideration the prevention of skin contact as well as regulation of air concentration below the allowable limits.

Control through job placement. In dealing with toxic substances, the use of pre-placement physical examinations is becoming an increasingly accepted practice. These exams enable you to place employees with known disabilities in jobs where the potential hazards of exposure will not constitute an added threat to their health. For example, workers with lung diseases should not be exposed to vapors and dust which can cause lung injury. In addition, medical evaluation of workers exposed to potential occupational hazards should be conducted regularly by a physician familiar with the hazards involved.

Because of the liability potential, both present and future, that is involved in such job assignments, none should be made without involvement of the Corporate Law Department.

Control through ventilation or process enclosure. Ventilation or process enclosure are generally the most important means of control and the most frequently used. General ventilation systems use fans or blowers with suitable ductwork to provide the work area with fresh air and draw out contaminated air. This dilutes the amount of vapor or dust in the area. Local exhaust ventilation systems employ the principle of capturing the contaminated air at its point of release and exhausting it to the outside.

Control through proper container handling. Storage of drums and other containers holding volatile toxic chemicals should be out of the direct rays of the sun and be protected against conditions that might contribute to a build-up of pressure within the container. The storage area, if indoors, should be cool, well ventilated, and free from dampness and direct heat. Drums should be stored with their body plugs and bungs upward.

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**Operations**

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| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

**TOXIC  
CHEMICALS  
OR POISONS  
(Cont.)**

Preferably, drums should be emptied by pump or by gravity, using a self-closing faucet. It is especially dangerous to use air pressure if the toxic material is also flammable. Drums should be completely drained and their plugs securely replaced. Water or any material foreign to the drum's original contents should not be introduced into the drum. Reusable or single-trip drums to be returned should not be washed. All closures must be tightly replaced. Finally, drums should be stored away from heat or open flames.

Control through protective clothing. Circumstances and the physical characteristics of the chemical involved dictate the type of personal protective equipment worn before opening any container of a toxic chemical or before cleaning up spills. Irritating liquids such as xylene, formaldehyde, butyl alcohol, and turpentine require eye protection (e.g., safety goggles or face shields) to protect workers against the danger of direct splash. Available respiratory protection against chemical vapors, gases, and dusts includes self-contained breathing apparatus, positive pressure hose masks, airline respirators, or industrial canister-type gas masks. The type used is governed by the degree of protection needed, nature of the exposure, and type of contaminant.

For foot protection, leather safety shoes may be recommended for workers handling drums and heavy cans. But rubber shoes, or those of an equivalent impermeable material, should be worn when handling acids or other corrosive material.

**CORROSIVES**

Chemicals classified as corrosives include strong acids, acid anhydrides, and alkalis, which can cause chemical burns of the skin and eyes. Some acid fumes can react with such materials as sulfides, cyanides, and others to form toxic vapors. Some of the most hazardous chemicals in this group are the mineral acids such as sulfuric, nitric, hydrochloric, chromic, and hydrofluoric and strong alkalis such as sodium hydroxide. Examples of corrosives with a comparatively lower degree of handling hazard are benzoic and phosphoric acids.

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**Operations**

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| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

**CORROSIVES  
(Cont.)**

Handling and storage of drums containing corrosives are generally the same as for toxic chemicals. Filled containers of corrosives should be kept closed, handled carefully, and isolated from incompatible materials. All exposed metal should be painted. Generally, spillage is handled by washing it to a new neutralization pit with copious applications of water, although acids can be neutralized with soda ash or lime.

When handling or storing corrosives, safety showers or adequate water hose should be readily available. In addition, protective clothing -- face shields, goggles, rubber boots, aprons, and gloves -- should be worn.

**FLAMMABLES**

Materials which ignite easily under normal industrial conditions are considered to be dangerous fire hazards. In the context of this subject, only liquids will be considered, although flammables include gases and any finely divided combustible dust.

It is sound practice to keep a reference file on flammable liquids. (The properties of many common flammable liquids are available from their manufacturers or suppliers as well as other easily accessible sources.) Generally, such a file records the following properties: flash point (closed or open cup); autoignition temperature; explosive limits; vapor density ratio; boiling point; reactivity.

When not superseded by city or local restrictions, outside storage of flammables should be limited in quantity to 100 drums per group. Large quantity groups should not be located closer than 50 feet to an important building. Smaller groups may be located more closely: for 5-drum groups of extremely flammable liquids (closed cup flash point, 20 to 100 degrees, Fahrenheit), the distance should be at least 10 feet. Adequate spacing, preferably at least 25 feet, should be maintained between groups.

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| HANDLING HAZARDOUS CHEMICALS | 9/15/85    | 9/15/85        |     |

**FLAMMABLES  
(Cont.)**

When there is any possibility of splashing or spilling in the handling of flammables, complete eye and/or face protection should be worn. Respiratory protection should be used as required, and other protective equipment must be selected according to the seriousness of the hazard involved.

**OXIDIZERS**

Chemicals which may cause fire upon contact with organic or combustible materials, or may intensify a fire by supplying oxygen, are generally considered as oxidizers. Such oxidizing agents as chlorates, nitrates, peroxides, hypochlorites, and perchlorates can cause explosions and fires from contact with organic matter.

In general, oxidizers should be stored in fireproof structures with concrete floors and separated from organic materials. Spills, if solid, can be swept up, or washed away if liquid.

Some of the oxidizers are relatively stable by themselves but upon contact with strong acid or organic substances react violently. For this reason, it is important that you know their chemical and physical properties and take necessary protective precautions accordingly.

**SHOCK AND  
IMPACT  
SENSITIVE  
MATERIALS**

Typical of this group are dry organic peroxides and nitromethane. All phases of handling and storing of these chemicals in your plant should be written down. Rules governing all buildings, including emergency procedures, should be posted conspicuously. All tools, equipment, and construction materials -- even such items as dustpans and brooms -- should be chosen for their resistance to producing sparks, static, or chemical reaction.

Temperature in storage should be regulated where necessary to avoid critical extremes. Stock should be segregated from other hazardous and incompatible chemicals. Only closed containers should be allowed in

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**Operations**

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SHOCK AND  
IMPACT  
SENSITIVE  
MATERIALS  
(Cont.)

the storage area and they should be removed from the building for opening. Any possibility of deterioration from moisture, light, temperature, or other cause should be minimized by rotating stocks.

Housekeeping standards must be high and rigidly maintained in the handling of shock and impact-sensitive materials. Floors must be kept clean, free from spills and broken containers at all times. Sweepings should be picked up and rendered harmless by chemical means, if feasible, or disposed of through regular waste channels.

HAZARDOUS  
WASTES

In addition to the preceding comments, hazardous wastes brought into a McKesson facility pose their own problems. Although every container of such waste is specifically labeled, their contents are indeed wastes, and many contain contaminating substances that pose safety problems in their own right. It is essential that hazardous wastes stored at a McKesson facility be evaluated in the context of the customer's operation that generated them.

COMPAT-  
BILITIES

Although many hazardous chemicals can be easily and safely handled in their own right, their danger can be greatly increased if they come into contact with other species; for example, acetic anhydride can be expected to react with isopropyl alcohol.

Similarly, some chemicals react violently even with water -- for example, sodium hydrosulfite. Such materials must be kept indoors and away from any source of moisture.

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## McKesson Operations

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| HAZARD COMMUNICATIONS | 6/30/86    | 6/30/86        |     |

### OSHA HAZARDOUS CHEMICAL LIST

OSHA Hazardous Chemical reporting is controlled by the OLE system through the production of Hazardous Chemical Lists and Material Safety Data Sheets.

Two reports are produced to support Service Center requirements for lists of hazardous chemicals stocked in inventory. The first report is CD03R05Q, OSHA Hazardous Chemical List By Product. This report is produced the last day of each month and will be in the Service Center queue (class 1, form D 033) the following day.

In order to keep this report up to date, a daily on-line report (CD03R05R) is produced whenever an active inventory record is added for the Service Center.

The daily report lists only those items added to the inventory file for a particular day. All daily lists must be reviewed in conjunction with the previous month-end report to obtain a complete list of hazardous chemicals which may be stocked at a location.

CD03R05Q and CD03R05R should be filed in Appendix 1, of the Hazardous Communications Program manual. Previous months' reports can be discarded when CD03R05Q is produced for a new month.

### MATERIAL SAFETY DATA SHEET PROCEDURES

Material Safety Data Sheets (MSDS) for each hazardous chemical are maintained in one National file by the Home Office Operations Department. Product records are then updated to indicate that the product requires an MSDS and the date the MSDS for the product was created or last changed. MSDS's can be created at either the product root or SKU level but normally an MSDS at the product root level will be adequate for SKU's existing under that root.

MSDS's entered into the system will be numbered the same as the product root or SKU for which they were created. Hard copies of MSDS's will be produced automatically for customer orders containing hazardous chemicals and can be produced on a request basis to satisfy employee information requirements.

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### EMPLOYEE ACCESSI- BILITY

Hard copy MSDS's are available to all employees through use of the NPDI transaction. This satisfies the requirement to make an MSDS accessible to an employee. The procedure to produce an MSDS copy for an employee will be to have the Administrative Manager enter transaction NPDI and bring up the SKU the employee wants the MSDS for. When the SKU is displayed on the screen, a next code of "M" (for MSDS) should be entered and the enter key pressed. An MSDS report will then be placed in the VPS queue class 1, form A013. The MSDS produced will be for the SKU if one exists at that level or the product by default. If the "M" is not displayed in the available next codes, it means that there is not an MSDS in the system for the product. The VPS operator should sign on, print the MSDS and deliver it to the Administrative Manager.

Service centers can also order copies of MSDS's through the Technical Director, Home Office Operations. The print out will be alphabetized and custom printed to contain only the products identified on the Service Center's OSHA Hazard Chemical List (CD03R05R).

### CUSTOMER DISTRIBU- TION

MSDS's will be produced for customer orders containing hazardous chemicals under the following circumstances.

- First time a hazardous chemical is ordered by a customer.
- First time a customer orders a hazardous chemical after a change to the MSDS in the system.
- First time a customer orders a hazardous chemical if a year has elapsed since the customer was last issued an MSDS.

Each time an MSDS is issued to a customer for a hazardous chemical, the MSDS date in the customer menu record for that product will be updated. This date is then used to compare to the MSDS date in the product record to determine when a new MSDS is required by the customer.

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| HAZARD COMMUNICATIONS | 6/30/86    | 6/30/86        |     |

REGULAR  
WORK  
ORDERS -  
(NOEN)

The bills of lading and MSDS's produced for RWO's will be cross referenced. When an MSDS is required for a product on a bill of lading the message "MATERIAL SAFETY DATA SHEET FOR PRODUCT XXXXXXXX ATTACHED" will be printed following normal bill of lading product identification. The MSDS will contain the customer name and address and the work order number identifying the bill of lading to which it should be attached. The bill of lading will also contain the following wording following all product information: "SIGNATURE ON THE 'RECEIVED BY' LINE, BELOW, ALSO ACKNOWLEDGES RECEIPT OF A MATERIAL SAFETY DATA SHEET(S) FOR NOTED HAZARDOUS CHEMICALS IN THIS SHIPMENT." All MSDS's should be attached to the appropriate bills of lading and delivered to the customer.

REGULAR  
WORK  
ORDERS -  
(NPOE)

Preshipped orders will automatically create an MSDS when they include a hazardous chemical. When NPOE is used to enter an order, the VPS operator should install plain paper in the printer and print the MSDS from class 1, form A015. MSDS should then be mailed to the customer.

DIRECT  
ORDERS

Direct orders (DIR) will also produce an MSDS whenever (NPSH) shipment confirmation is run against a direct order. The operator should retrieve these MSDS's daily by using VPS to print class 1, form A014. MSDS should then be mailed to the customer.

Each transaction which initiates the printing of MSDS documents does so by initiating a second program which creates the report in the VPS print queue. If a machine or communications failure occurs the program may not complete, and all required MSDS documents may not be created. If this happens the message "MSDS PRINT DID NOT COMPLETE SUCCESSFULLY" will be sent to the originating location. It will then be necessary for the operator to determine which MSDS's are missing and recreate them.

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## McKesson Operations

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| HAZARD COMMUNICATIONS | 6/30/86    | 6/30/86        |     |

### RECREATING MSDS

The procedure for recreating MSDS's varies depending upon which transaction created them. If the MSDS's were created by a bill of lading run, all MSDS's which were printed should be matched to the appropriate bills of lading for distribution to the customer and checked off on the bill of lading control report. Any bill of lading requiring an MSDS, ("\*" behind its number on the control report) which did not have an MSDS attached should be separated and an MSDS produced using the NPDI "M" function. If an exceptionally large rerun of MSDS's is required, contact the Manager of Information Services at the Home Office for alternate instructions.

If MSDS's have to be recreated for NPSH or NPOE transactions, they must be recreated using the NPDI "M" next code option. In this case the MSDS will not include the customer name. The customer name and address and order number should be typed on the MSDS or a cover letter prior to mailing to the customer.

An on-line control report will be produced daily listing all orders for which an MSDS should have been produced the previous day. Work order numbers from the bill of lading runs, direct orders and NPOE should be compared to this report to ensure that all required MSDS's were produced.

### CUSTOMER ACKNOWLEDGE- MENTS

The bills of lading and MSDS's produced for RWO's will require obtaining a customer signature on the bill of lading and retention of the signed bill of lading acknowledging receipt of the MSDS. Retention periods and procedures are currently being developed by the Home Office Operations Department. Customer signatures will not be obtainable for NPOE, direct orders, or orders delivered by common carrier, and the updated customer record will be the documentation for these orders. The signed bills of lading should be retained until further notice. Do not discard these documents.

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**McKesson**  
**Operations**

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| HAZARD COMMUNICATIONS | 6/30/86    | 6/30/86        |     |

**MAINTENANCE  
AND CHANGES**

MSDS's will be revised from time to time. The revisions are required when we learn of significant new information or when we detect errors in the current MSDS version.

The MSDS will also be revised as soon as the manufacturer advises us of new information. If the new information is significant, the Technical Director will alert all Service Centers by mailbox that a significant change has occurred and will identify the change. The mailbox message will be followed later by a letter explaining the reasons for the change and any subsequent action required by the Service Center.

In all cases, the date of the revision will be put into the "Date Issued" field and the superseded date will be put into the "Supersedes" field.

**MSDS  
DOCUMENTATION:  
STOCKPOINT  
SHIPMENTS**

In certain cases, Service Centers will call in an order for immediate shipment from a stockpoint. The bill of lading is then hand-generated at the stockpoint. In these cases, the Service Center will print out the OLE bill of lading and the appropriate Material Safety Data Sheets. The Service Center will mail the MSDS's and make a handwritten notation of the mailing on the OLE printed bill of lading (for example, MSDS mailed 1/25/85, initials). This bill of lading should be retained in the same manner as other bills of lading.

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**McKesson**  
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| HOUSEKEEPING   | 9/15/85    | 9/15/85        |     |

**DEFINITION**

Housekeeping, or "good housekeeping" as it is generally known, is essentially a state of orderliness as evidenced by the proper storage and handling of materials in raw, intermediate, and finished stages, efficient disposal of wastes, prompt removal of spillage, and general maintenance of premises and equipment to assure that they are free of dust, drippings, spatters, and overflows.

**RESPONSIBILITY**

Good housekeeping, like safety, is everyone's concern, but management has the responsibility to assure that a clean and orderly work environment is maintained. Individual assignment and accountability is normally essential however, to assure desired results on an on-going basis. Good managers and direct supervisors will reinforce the importance of good housekeeping and its overall impact on their operation.

**BENEFITS DERIVED**

Good housekeeping is good business. Just as poor housekeeping will negatively impact an operation, good housekeeping will have a positive impact.

Proper housekeeping goes hand-in-hand with an efficient operation. Work organization will be enhanced. Interruptions due to congestion, rehandling, etc., will be minimized.

The elimination of poor housekeeping will reduce fire hazards, making a safer operation.

There is a definite relationship between housekeeping and accidents. Statistics indicate that more than 50 percent of industrial injuries are directly traceable to falls, falling objects, and the mishandling of materials, and that such injuries are frequently a result of poor housekeeping.

Downtime can be reduced due to inoperative equipment, resulting from contact with damaging materials or atmospheres. Lower maintenance costs of equipment should result from good housekeeping practices.

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**BENEFITS  
DERIVED  
(Cont.)**

Of primary significance, a more efficient and safer operation will improve and enhance worker morale.

**IMPLEMENTA-  
TION**

"Workflow" within an operation should be studied so that equipment and operations are arranged to eliminate "bottle-necks." Additional factors affecting housekeeping are as follows:

1. Work areas should be properly illuminated.
2. Aisles and passageways should be kept clear at all times. Walkways and ramps should be entirely clear of materials and equipment at all times. These should be properly identified by floor striping to indicate limitations and to encourage use of proper storage locations.
3. Floor surfaces should be kept clean, dry, and free of holes or projections. Chemical dust or residue should be cleaned up upon discovery. The periodic use of a floor scrubber is recommended to reduce build-up of deposits from lift truck tires, oil drips, and to eliminate the corrosive effect of some materials in contact with the floor surface. The use of a floor scrubber can also reduce slippery conditions brought about by floor condensation. (Do not use absorbent clays on wet or damp floors except to dike or absorb spills. The clays become extremely slippery and hazardous and difficult to remove when compacted by lift trucks. Use sharp sand to reduce slippery conditions created by damp floors.)
4. Pallets should be kept in good repair. Broken boards or projecting nails can bring about increased operating expenses far greater than the pallet repair or replacement cost. Unused pallets should be properly and neatly stacked.

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IMPLEMENTA-  
TION  
(Cont.)

5. Proper aisle and passageway arrangement and clearances should be maintained. Storage clearances from buildings and storage adjacencies must be observed. Yard storage should be arranged to provide for empty and full containers.
6. Unpaved yard areas should be free of weeds to diminish fire hazard and to project a neat appearance.
7. Lawns should be kept mowed and shrubbery trimmed.
8. Every effort should be taken to avoid spillage during the unloading of boxcars. Rail sidings should be inspected after each use to assure that the area is free of any residue or spillage.
9. Buildings, roofs, canopies, storage tanks, etc., should be kept in good repair and appearance. Functional painting is an aid to good housekeeping. Lighter wall colors on building interiors can assist in housekeeping efforts. Likewise, clean windows can improve visibility.
10. Equipment should be maintained for appearance as well as efficiency.
11. Tool cribs and tool racks encourage good housekeeping and promote efficiency by eliminating hazardous storage of tools around the warehouse or yard area.
12. Trash barrels and containers should not be allowed to overflow and should be emptied daily. Trash service receptacles which are picked up periodically should be kept closed and away from the building to minimize fire hazards.
13. Broken bags or leaky drums should be attended to immediately to minimize spillage.

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IMPLEMENTA-  
TION  
(Cont.)

14. Conditions which permit the discharge of toxic or objectionable smoke, dust, dirt, fumes, odors, etc., into the atmosphere or the vicinity surrounding the operation should be corrected. The installation of proper devices designed to eliminate or reduce air pollution is a part of plant housekeeping activities. Care must be taken to assure the safe collection and disposal of dusts and fumes.

SUSTAINING  
INTEREST

Sustaining interest is a vital part of a good housekeeping program and requires the wholehearted support of all employees. The individual support of a good housekeeping program is evidenced by the housekeeping condition of the work area. Supervisory and management support for such a program is also evident. Good housekeeping is an integral part of each employee's job performance.

A well organized and diversified housekeeping program can be stimulated and maintained by:

1. Regular safety meetings with fellow employees which provide the opportunity to exchange ideas and to generate concern.
2. Regular safety committee meetings to consider corrective action for housekeeping problems.
3. Suggestion systems which encourage employees to contribute toward housekeeping. Awards for suggestions can also enhance interest.
4. Publicity through posters, bulletin boards, and employee publications. Posters should be colorful, to the point, and should be changed frequently. Displays or pictures of bad practices can also be used to advantage.

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SUSTAINING  
INTEREST  
(Cont.)

5. Regular housekeeping inspections. Employee safety and housekeeping go hand-in-hand, thereby making frequent inspections essential. These include:
  - a. Daily inspections by employees and supervisors.
  - b. Weekly or monthly inspections for safety or fire protection purposes.
  - c. Quarterly Safety and Compliance Reviews.

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| OFFICE SAFETY  | 9/15/85    | 9/15/85        |     |

**GENERAL**

Hazardous conditions in the office are just as imminent as in the warehouse unless precautionary or corrective measures are taken. Safety is each employee's concern, but management has the responsibility to assure that the office is a safe environment in which to work.

Good office managers will maintain an "awareness" for safety by emphasizing its importance on an on-going basis. Recognition of safety hazards, the use of printed safety tips, informative posters, checklists, safety committee meetings, suggestion programs, Quarterly Safety and Compliance Reviews, among other things contribute to an "awareness" for safety.

The following situations are typical of what can occur in an office. With each situation, comments regarding preventive or corrective measures are stated.

| <u>DANGEROUS SITUATION</u>   | <u>PREVENTIVE/CORRECTIVE MEASURES</u>  |
|--|--|
| 1. Office machinery has nip points or sharp areas that cut or pinch.               | All office equipment should be switched off during inspection.                   |
| 2. Person walking by secretary catches clothes on typewriter.                      | Typewriters should be placed so that carriage cannot be returned into a walkway. |
| 3. Someone trips over a portable heater or fan that has been moved into a walkway. | Portable units should be secured in an out-of-the-way place.                     |
| 4. Person puts finger through an inadequate guard or fan or heater.                | Make sure that proper guards are in place on both sides of fan and on heaters.   |

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**Operations**

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**GENERAL  
(Cont.)**

**DANGEROUS SITUATION**

**PREVENTIVE/CORRECTIVE MEASURES**

- |   |  |
|---|--|
| 5. An unexpected electrical shock is experienced.   | Electrical cords and receptacles must be kept in good condition. Grounded wiring and appliances should be used.  |
| 6. Box or wheeled chair used to reach an out-of-the-way place. Window sill stood on to open a window lock near the ceiling. | Proper equipment, such as ladders or step stools, should be used at all times.   |
| 7. Heavy boxes lifted or moved incorrectly.   | Assistance by another person and proper lifting techniques should be used.   |
| 8. Two heavy top drawers of a filing cabinet pulled out at the same time.   | Heavier drawers should be positioned low in a filing cabinet if possible. Cabinets can be secured to floor to prevent toppling. The practice of closing each drawer after use should be practiced. |
| 9. Tightly packed drawers and protruding staples cause paper cuts when something must be pulled or filed.                   | Materials in drawers should be distributed so as not to cause over-crowding and paper cuts.  |
| 10. A finger is lacerated due to inattention at the paper cutter.   | Strict attention should be paid to keeping a paper cutter in closed position when not in use.  |

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GENERAL  
(Cont.)

DANGEROUS SITUATION

PREVENTIVE/CORRECTIVE MEASURES

- |   |   |
|---|---|
| 11. A small cut is experienced while going through a supply cabinet or desk.                                | Tacks and straight pins should not be mixed with paper clips in the same container. Sharp objects, such as scissors, razor blades, or letter openers, should be sheathed or stored when not in use. |
| 12. Paper cuts are experienced during collating.  | Use a "rubber finger."  |
| 13. An employee trips over a waste basket adjacent to an aisle.   | Desks, file cabinets, trash receptacles, etc., should be located so that personnel movement is taken into consideration. Move waste basket to the position away from the aisle.                     |
| 14. Late on a winter evening, an employee trips on the front steps leaving the office.                      | Inadequate lighting at entrances, stairwells, etc., can bring about falls.  |
| 15. An employee loses footing when stepping on an extension cord and bruises herself against a nearby desk. | The overuse of extension cords should be prohibited because it is a fire hazard. Where they are required for use, they should be protected by a runner.   |
| 16. A person slips when coming in from outside into the entrance area.                                      | Floor mats should be used to dry off shoes. Boards or floor tiles should be replaced as required. Miscellaneous items such as paper clips, pencils, etc., should be picked up when observed.        |

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| MAINTENANCE SAFETY CHECKOUT<br>(LOCKOUT PROCEDURES) | 9/15/85    | 9/15/85        |     |

**SUMMARY**

The purpose of this procedure is to eliminate the possibility of either injuries to personnel (whether they be McKesson employees or outside contract labor), or incidents involving equipment when maintenance, repair or construction work is being done at our service centers or packaging facilities. Supervision must exercise its responsibilities for checking out all the facts before any work is contemplated and must "lockout" any possibility of an accident occurring by taking the necessary safeguards.

These are general guidelines to assist the Operations Manager in structuring a Maintenance Safety Checkout plan. Included are points which are generally found in a "Safety Lockout Procedure" used in the chemical industry. This outline covers a wide spectrum of activities which may be found in smaller McKesson service centers up to the larger Bulk Plants. Many times, on larger repairs especially, it is helpful to contact the Region for their input. Drawing on the experience of others furthers the chances that the job will be done according to code and/or acceptable standards.

Even though this list may appear to include excessive detail, it is strongly recommended that the responsible individual go through the outline to make certain nothing has been overlooked. A suggested Equipment Checkout form is included (see Exhibit 1) to formalize the considerations listed in this procedure.

**PREPARATION  
AND  
PLANNING**

1. What is the exact nature of the maintenance need?

For example, flange on the chlorinated solvent line is leaking and the gasket requires replacement; or the valve on the sulfuric acid tank does not completely shut off, allowing a small flow of acid indicating that the valve may need replacement. Is there a backup valve that can be locked or tagged to prevent additional flow while repairs are being made? Do repairs require fume removal or protective clothing? Is there a fire hazard? Are all required materials on hand?

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| MAINTENANCE SAFETY CHECKOUT<br>(LOCKOUT PROCEDURES) | 9/15/85    | 9/15/85        |     |

PREPARATION  
AND  
PLANNING  
(Cont.)

2. If the job requires dismantling, or work on or in the interior of a pump, line or tank, what were the last contents or the equipment? Has the equipment been sufficiently cleaned out?

For example, in the case of chlorinated hydrocarbons such as 1,1,1 - Trichloroethane, or Methylene Chloride, there may be only traces of liquid in a pump, line or tank, but the vapor space will be essentially saturated with vapor: any close contact by personnel will easily lead to exposures in excess of recommended safe levels set for inhalation. Fumes from acids, Nitric, Hydrochloric, and Sulfuric are extremely treacherous.

Should there be any question about vapor levels in tanks or areas, be certain always to resort to use of appropriate respirators or face masks recommended for the product. Since respirators are good for only short periods of time, an extended effort to remove the fumes before attempting to work in the area should be made. If it is necessary to work in a recently contaminated area, in addition to the use of respirators and masks, always use the buddy system.

The buddy system consists of one employee stationed a short distance away from the person entering the hazardous area. The sole responsibility of the first worker is to provide assistance should it be needed. Obviously, this person must be fully prepared and equipped for the type of emergency relative to the particular situation.

3. If a cleanout of any equipment is required, does the cleanout present an environmental pollution problem? Can this be avoided?

If the material is of a corrosive nature, transfer it by safe means to appropriate drums, or to the neutralizing pit, and adjust pit to neutrality. In the case of solvents, use all reasonable means to catch any spillage and transfer it to an appropriate drum.

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PREPARATION  
AND  
PLANNING  
(Cont.)

4. Is there an MSDS on the material in a line, tank or piece of equipment to be repaired, and are the usual considerations indicated? These include:
  - a. Flammability and/or explosiveness of air mixtures
  - b. Combustibility
  - c. Corrosiveness
  - d. Poisonous
  - e. Water soluble
5. Have any unusual properties of the previous contents of a line or tank or pump been discussed with the employee, and is he/she equipped to deal with this situation? Does the McKesson service center have the required protective equipment?
6. In case of welding needs, whenever possible a contractor who has an explosion meter should be selected. This becomes essential if the scheduled work involves equipment which contained combustibles or flammables, or where these are close to the area where the welding is to take place. Will welding present any toxic fumes that the welder should be protected against?
7. If electrical work is contemplated, or if electrical equipment needs to be shut down during work, is there a master switch that can be locked out by padlock or bolt? Will the lockout affect other activities? Can a fuse be pulled? How can power being inadvertently turned on be prevented?
8. If a change in piping, valving or wiring of a substantial nature is contemplated, in the interests of safety and good industrial practice this change should be noted on applicable engineering drawings. Both the Region and Home Office should be notified.

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| MAINTENANCE SAFETY CHECKOUT<br>(LOCKOUT PROCEDURES) | 9/15/85    | 9/15/85        |     |

PREPARATION  
AND  
PLANNING  
(Cont.)

9. Upon completion of the job:
  - a. Who will be responsible for confirming the job is completed as requested?
  - b. Who will remove safeguards imposed, and/or restore use of the equipment?

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EQUIPMENT CHECKOUT FORM

Service Center \_\_\_\_\_ Date \_\_\_\_\_

Person completing form \_\_\_\_\_

What type of craft is needed? Electrical \_\_\_\_\_ Welding \_\_\_\_\_

Pipe Fitting \_\_\_\_\_ Mechanical \_\_\_\_\_

What is to be done? \_\_\_\_\_

What was last in the equipment or most likely to have left traces?

If required, how has the equipment been cleaned? \_\_\_\_\_

If welding or entry are contemplated, is explosion meter test advisable? \_\_\_\_\_

If entry is required, have the fuse blocks been removed from the control panel or on/off lever locked out in the off position? \_\_\_\_\_

By whom? \_\_\_\_\_

If other lines and/or equipment are in use nearby in situations where spills or leakage pose a threat, the valves must be locked shut and transfer lines capped. Necessary \_\_\_\_\_ Accomplished \_\_\_\_\_

Who in authority confirms that the equipment is ready for repairs (cleanout free of toxics, flammables, combustibles)? \_\_\_\_\_

Time \_\_\_\_\_

Who will confirm the job is completed, and any safety measures (lockout) removed? \_\_\_\_\_

Job Completed: Date \_\_\_\_\_ Time \_\_\_\_\_

By \_\_\_\_\_

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| Subject                | Issue Date | Effective Date |     |
| RESPIRATORY PROTECTION | 9/15/85    | 9/15/85        |     |

**PERMISSIBLE  
PRACTICE**

The objective of a respiratory protection program is to prevent and control exposure to atmospheric contamination potentially resulting in occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. The primary manner of accomplishing this goal should be by means of accepted engineering control measures designed into the work area (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to the following requirements.

Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators that are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protective program which shall include the requirements outlined below.

The employee shall use the provided respiratory protection in accordance with instructions and training received. Appropriate instruction on selection and use of respiratory protection must be provided all employees before use of such equipment. Exhibit 1 is an example of an instruction booklet.

**MINIMAL  
ACCEPTABLE  
PROGRAM  
REQUIRE-  
MENTS**

1. Written standard operating procedures governing the selection and use of respirators shall be established.
2. Respirators shall be selected on the basis of hazards to which the worker is exposed.
3. The user shall be instructed and trained in the proper use of respirators and their limitations.
4. Where practicable, the respirators should be assigned to individual workers for their exclusive use.

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| RESPIRATORY PROTECTION | 9/15/85    | 9/15/85        |     |

MINIMAL  
ACCEPTABLE  
PROGRAM  
REQUIRE-  
MENTS  
(Cont.)

5. Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use, or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.
6. Respirators shall be stored in a convenient, clean and sanitary location.
7. Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.
8. Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained. Concerns regarding work area conditions are to be immediately brought to the supervisor's attention in order to initiate corrective measures.
9. There shall be regular inspection and evaluation to determine the continued effectiveness of the program.
10. Persons should not be assigned to tasks requiring use of respirators unless it has been determined that no other feasible manner of conducting the work is possible. (Example, use of dust masks in bagging operations.) In such instances, the respirator user's medical status should be reviewed periodically (for instance, annually) to insure no physical effects from such use are evident. A local physician should be consulted if there is question as to what health and physical conditions are pertinent.
11. Approved or accepted respirators must be used. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed in accordance with standards established by competent authorities. The U. S. Department of Labor, Occupation Safety and Health Administration is such an authority.

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**SELECTION  
OF  
RESPIRATORS**

Respirators shall be selected on the basis of the hazards to which workers are exposed (29 CFR 1910.134), and ANSI 288.2-1980 shall be used for guidance in the selection of proper respirators.

**AIR QUALITY**

Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Breathing air shall meet at least the requirements of the specification of Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966. Compressed oxygen shall not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators.

Breathing air may be supplied to respirators from cylinders or air compressors.

1. Cylinders shall be tested and maintained in as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 178). This standard specifies, for example, a hydrostatic test on a typical self-contained breathing apparatus tank, once every five years.
2. The compressor for supplying air shall be equipped with necessary safety and standby devices. A breathing air-type compressor shall be used. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable inline air purifying sorbent beds and filters installed to further assure breathing air quality. Units equipped with air purifying systems such as this must have a routine filter servicing schedule established. A receiver of sufficient capacity to enable the respirator wearer to escape

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## Operations

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| RESPIRATORY PROTECTION | 9/15/85    | 9/15/85        |     |

### AIR QUALITY (Cont.)

from a contaminated atmosphere in the event of compressor failure, and alarms to indicate compressor failure and over-heating shall be installed in the system. If an oil-lubricated compressor is used, it shall have a high-temperature or carbon monoxide alarm, or both. If only a high-temperature alarm is used, the air from the compressor shall be frequently tested for carbon monoxide to insure that it meets the specifications described in 1. above.

3. Breathing air-line couplings within a facility shall be incompatible with outlets for other gas systems to prevent inadvertent hook-up of air line respirators with nonrespirable gasses or oxygen.
4. Breathing gas containers shall be marked in accordance with American National Standard Institute Method of Marking Portable Compressed Gas Containers to Identify the Material Container, Z48.1-1954; Federal Specification BB-A-1034a, June 21, 1968, Air, Compressed for Breathing Purposes; or Interim Federal Specification GG-B-00675b, April 27, 1965, Breathing Apparatus, Self-Contained.

### USE OF RESPIRATORS

Standard procedures shall be developed for respirator use. These should include all information and guidance necessary for their proper selection, use, and care. Potential emergency and routine uses of respirators should be anticipated and planned for. Review of respiratory equipment should be conducted on an ongoing basis during operational meetings with employees.

The correct respirator shall be specified for each job. The respirator type is usually specified in a particular situation or job function by a qualified individual supervising the respiratory protection program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned.

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| RESPIRATORY PROTECTION | 9/15/85    | 9/15/85        |     |

USE OF  
RESPIRATORS  
(Cont.)

This mark shall not affect the respirator performance in any way. The date of issuance should be recorded. Routine inspection during cleaning should be conducted to determine the need for replacement.

Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be temporarily encountered in an operation or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

1. In given situations where the wearer, given the potential of an unexpected failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional man shall be present in general proximity to the primary worker. Communications (visual, voice, or signal line) shall be maintained between any and all individuals present. Planning shall be such that one individual will be unaffected by any possible incident which could occur based upon the circumstances being present. He will have the proper rescue equipment to be able to assist the other(s) in case of emergency.
2. When self-contained breathing apparatus or hose masks with blowers are used in atmospheres immediately dangerous to life or health, standby men must be present with suitable rescue equipment.
3. Persons using air-line respirators in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres, and equivalent provisions for the rescue of persons from hazardous atmospheres shall be used. A standby man or men with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue.

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USE OF  
RESPIRATORS  
(Cont.)

Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned, and maintained.

For safe use of any respirator, it is essential that the user be properly instructed in its selection, use and maintenance. Both supervisors and workers shall be so instructed by competent persons. Training shall provide the men an opportunity to handle the respirator, have it fitted properly, test its face-piece-to-face seal, wear it in normal air for a period of time to gain familiarity, and, finally, to wear it in a test atmosphere.

1. Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal. Physical conditions which could contribute to an inadequate face seal could include a growth of beard, sideburns, a skull cap that projects under the facepiece, or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a facepiece. The worker's diligence in observing these factors shall be evaluated by periodic check. To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This should be done by following the manufacturer's facepiece fitting instructions.
2. Providing respiratory protection for individuals wearing corrective glasses is a serious problem. A proper seal cannot be established if the temple bars of eye glasses extend through the sealing edge of the full facepiece. As a temporary measure, glasses with short temple bars or without temple bars may be taped to the wearer's head. Wearing of contact lenses in contaminated atmospheres with a respirator shall not be allowed. Systems have been developed

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USE OF  
RESPIRATORS  
(Cont.)

for mounting corrective lenses inside full facepieces. When a workman must wear corrective lenses as part of the facepiece, the facepiece and lenses shall be fitted by qualified individuals to provide good vision, comfort and a gas-tight seal.

3. If corrective glasses or goggles are required, they shall be worn so as not to affect the fit of the facepiece. Proper selection of equipment will minimize or avoid this problem.

MAINTENANCE  
AND CARE OF  
RESPIRATORS

A program for maintenance and care of respirators shall be adjusted to the type of plant, working conditions, and hazards involved, and shall include the following basic services: (See Exhibit 2)

1. Inspection for defects (including a leak check)
2. Cleaning and disinfecting
3. Repair
4. Storage

Equipment shall be properly maintained to retain its original effectiveness.

All respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in satisfactory working condition.

Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. It shall be determined that the regulator and warning devices function properly. A monthly inspection checklist is included in Exhibit 2 for self-contained breathing apparatus.

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**MAINTENANCE  
AND CARE OF  
RESPIRATORS  
(Cont.)**

Respirator inspection shall include a check of the tightness of connections and the condition of the face-piece, headbands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them from taking a set during storage.

A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

Routinely used respirators shall be collected, cleaned and disinfected as frequently as necessary to insure that proper protection is provided for the wearer. Each worker should be briefed on the cleaning procedure and be assured that he will always receive a clean and disinfected respirator. Such assurances are of greatest significance when respirators are not individually assigned to workers. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

Replacement or repairs shall be done only by experienced persons with parts designed for the respirator. Problems with any respiratory piece of equipment experienced by the wearer are to be brought to the supervisor's attention immediately. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

After inspection, cleaning and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators placed at stations and work areas for emergency use should be quickly accessible at all times and should be stored in compartments built for the purpose. The compartments should be clearly marked. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons.

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**MAINTENANCE  
AND CARE OF  
RESPIRATORS  
(Cont.)**

Respirators should be packed or stored so that the face-piece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid.

**IDENTIFICATION OF GAS  
MASK  
CANISTERS**

The primary means of identifying a gas mask canister is typically by means of properly worded labels. The secondary means of identifying a gas mask canister shall be by a color code (see pages 11 and 12).

All who issue or use gas masks falling within the scope of this section shall see that all gas mask canisters purchased or used by them are properly labeled and color coded in accordance with these requirements before they are placed in service, and that the labels and colors are properly maintained at all times thereafter until the canisters have completely served their purpose.

On each canister shall appear in bold letters the following:

Canister for \_\_\_\_\_  
(Name for atmospheric contaminant)  
or  
Type N Gas Mask Canister

In addition, essentially the following wording shall appear beneath the appropriate phrase on the canister label: "For respiratory protection in atmospheres containing not more than \_\_\_\_\_ percent by volume of \_\_\_\_\_."  
(Name of atmospheric contaminant)

All of the markings specified above should be placed on the most conspicuous surface or surfaces of the canister.

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IDENTIFICA-  
TION OF GAS  
MASK  
CANISTERS  
(Cont.)

Each canister shall have a label warning that gas masks should be used only in atmospheres containing sufficient oxygen to support life (at least 16 percent by volume) since gas mask canisters are designed only to neutralize or remove contaminants from the air.

Each gas mask canister shall be painted a distinctive color or combination of colors indicated in the following table. All colors used shall be clearly identifiable by the user and clearly distinguishable from one another. The color coating used shall offer a high degree of resistance to chipping, scaling, peeling, blistering, fading, and the effects of the ordinary atmospheres to which they may be exposed under normal conditions of storage and use. Appropriately colored pressure sensitive tape may be used for the stripes.

EXHIBIT

Exhibit 1 follows the table. This is a reprint of a pamphlet published by the U.S. Department of Health, Education and Welfare and was prepared by the National Institute for Occupational Safety and Health.

Where we use such protection, this article should be made freely available to our employees as well as being a frequent topic for safety meeting discussion.

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## TABLE

Atmospheric contaminants to  
be protected against:

### Colors assigned

|  |  |
|--|--|
| Acid gases .....   | White  |
| Hydrocyanic acid gas .....   | White with 1/2-inch green stripe completely around the canister near the bottom.   |
| Chlorine gas .....   | White with 1/2-inch yellow stripe completely around the canister near the bottom.  |
| Organic vapors .....   | Black  |
| Ammonia gas .....  | Green  |
| Acid gases and ammonia gas .....   | Green with 1/2-inch white stripe completely around the canister near the bottom.   |
| Carbon Monoxide .....  | Blue   |
| Acid gases and organic vapors ..   | Yellow   |
| Hydrocyanic acid gas and chloropicrin vapor .....  | Yellow with 1/2-inch blue stripe completely around the canister near the bottom.   |
| Acid gases, organic vapors, and ammonia gases .....  | Brown  |
| Radioactive materials, excepting tritium and noble gases .....   | Purple (Magenta)   |
| Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors ..... | Canister color for contaminant as designated above, with 1/2-inch gray stripe completely around the canister near the top. |
| All of the above atmospheric contaminants .....  | Red with 1/2-inch gray stripe completely around the canister near the top.   |

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TABLE (Cont.)

Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

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## PREFACE

Respiratory protective equipment can be effective in protecting you from the inhalation of hazardous amounts of airborne contaminants. However, this effectiveness is dependent on the respirator being properly fitted, maintained in good condition, and most importantly, on your knowing its proper uses and limitations. If the contaminants in your work environment require you to wear a respirator, then wear it; the alternatives are not worth the risk. Exposure to high concentrations of a toxic substance, even for a short time, can cause serious injury or death; and even exposure to lower concentrations of certain toxic substances for long periods of time can cause permanent damage to critical body organs such as lungs, liver, and kidneys. Work environments where the oxygen content of the air you breathe is below acceptable levels can also be hazardous.

As a user of respiratory protective equipment, you have the right:

1. To know what hazards you are being exposed to and the reasons why a particular respirator was selected;
2. To be instructed in the use of equipment;
3. To be allowed to wear the equipment in a test atmosphere so as to check for leakage and proper fit;
4. To be advised of the capabilities and limitations of the equipment; and
5. To be instructed in the proper maintenance of the respiratory protective equipment.

This guide, prepared for you, discusses the above aspects in some detail to enable you to understand the do's and don'ts of respirator usage to safeguard your health from airborne hazards encountered in the work environment.

## INTRODUCTION

The Occupational Safety and Health Administration (OSHA) has set maximum levels for many airborne toxic materials. If you are exposed to amounts of these materials in excess of the standard, the law requires that your employer install, implement, or institute feasible engineering or administrative controls so as to reduce your exposure to acceptable levels. If these controls do not prove feasible, or while they are being installed/instituted, your employer is required to furnish appropriate respiratory protection to each exposed employee. You may also have to wear respiratory protective equipment during cleaning and maintenance activities where you are briefly exposed to high concentrations of a hazardous substance. Further, your employer is required to establish a respiratory protection program with written standard operating procedures which detail, among other aspects, how the respirators were chosen and how they are to be used and maintained.

You should be familiar with the respirator selected and the proper maintenance procedures for the equipment.

## I. RESPIRATORY PROTECTIVE EQUIPMENT SELECTION

The selection of the proper respiratory protective equipment involves, for the most part, three basic steps:

- Identification of the hazard;
- Evaluation of the hazard; and
- Selection of the proper respiratory protective equipment.

### A. IDENTIFICATION OF THE HAZARD

Hazards may take many different forms. Since the selection of a respirator is based on the specific hazards to which you are exposed, **JUST ANY RESPIRATOR WON'T DO.** It is important to know something about the different kinds of hazardous materials which may exist within your facility requiring the use of respirators.

#### 1. Gaseous Contaminants

Gaseous contaminants add another invisible material to the air we already breathe. There are two types of gaseous contaminants:

- a. Gases include substances, e.g., carbon dioxide, which are solids or liquids only at very low temperatures and/or high pressures. Carbon dioxide is a gas at room temperature, but it also occurs as a solid, dry ice at low temperatures, and as a liquid in pressurized tanks.
- b. Vapors are exactly like gases except that they are formed by evaporation of substances, such as acetone or trichloroethylene, which ordinarily exist as liquids.

#### 2. Particulate Contaminants

Particulate contaminants are made of tiny particles or droplets of a material. There are three types of particulates:

- a. Dusts are solid particles produced by such processes as grinding, crushing, and mixing of powder compounds. Examples are sand and plaster dust.
- b. Mists are tiny liquid droplets given off whenever a liquid is sprayed, vigorously mixed, or otherwise agitated. Acid mists around diptanks used for metal cleaning and oil mists near newspaper printing presses are two examples.
- c. Fumes are tiny metallic particles given off when metals are heated. Fumes are found in the air near soldering, welding, and brazing operations as well as near molten metal processes such as casting and galvanizing. The two basic forms — gaseous and particulates — frequently occur together. Paint spraying operations, for example, produce both paint mist (particulate) and solvent vapors (gaseous).

#### 3. Oxygen Deficient Atmosphere

This condition is most commonly found in confined spaces with very poor ventilation. Examples are silos, petrochemical tanks, and the holds of ships. (In some situations an oxygen deficient atmosphere is purposely maintained. For instance, fruit is sometimes kept in warehouses with a lot of carbon dioxide and very little oxygen.) Oxygen deficient atmospheres occur in two different ways.

- a. Oxygen is "used up" by a chemical reaction in which it is combined with other elements. This is what happens when fire burns or iron rusts.
- b. Oxygen is "pushed out" by another gas. If a room with "normal" air (which contains about 21% oxygen) fills up with another gas, e.g., helium, there will be less oxygen in every breath you take because the oxygen is being steadily "displaced" by the helium.

Oxygen deficient atmospheres have been classified as immediately dangerous to life. Typical early symptoms are dizziness and euphoria — like being slightly drunk. Lack of oxygen affects the brain very quickly, so you might not be aware of what is wrong until you are too confused to escape. Oxygen starvation can cause serious injury to the brain.

#### 4. Atmospheres Immediately Dangerous to Life or Health

This is a term which is used to describe very hazardous atmospheres in which exposure will:

- a. Cause serious injury or death within a matter of minutes. Examples are exposure to high concentrations of carbon monoxide or hydrogen sulfide.
- b. Cause serious delayed effects. Exposure to critical levels of radioactive materials or cancer-causing agents are examples.

## B. EVALUATION OF THE HAZARD

Once a potential hazard has been recognized and the hazardous substance or particulate identified, it is then necessary to determine the amount of contaminant (concentration) present. The measured concentration can be stated in various "units," depending on the form of the contaminant. The two most widely used units are (1) mg/M<sup>3</sup> — milligrams of contaminant in air per cubic meter of air and (2) ppm — parts of contaminant in air per million parts of air. The measured concentration (in appropriate units) is then compared with either the permissible exposure level (PEL), mandated in OSHA regulations, or the threshold limit value (TLV), recommended by the American Conference of Governmental Industrial Hygienists (ACGIH). These values, as determined by these groups, are the maximum concentration to which a worker may be exposed day after day without adverse affects. It is your employer's responsibility to determine the concentration of the contaminant you are exposed to.

## C. SELECTION OF THE RESPIRATORY PROTECTIVE EQUIPMENT

After the hazard(s) has been recognized and measured, the other factors still need to be considered.

- Is the contaminant recognized the *only* contaminant present?
- Does the contaminant have adequate warning properties? (Warning properties are especially important when *air-purifying* respirators are used against gases and vapors.)
- Will the contaminant irritate the eyes at the estimated concentration to which the user will be subjected?
- Can the contaminant be absorbed through the skin? If it can, will it result in a serious injury?

Now the proper respirator can be chosen.

What types are available?

### 1. Respirator types:

Respiratory protective devices can be divided into two general categories:

#### a. Air-purifying respirators

These devices remove the contaminant from the breathing air before it is inhaled. For each model of air-purifying respirator, there are usually many air-purifying filters available for protection against specific contaminants. These filters fall into two subgroups: particulate removing filters and vapor and gas removing filters called cartridges or canisters. These are discussed in Appendices I and II. Combination filters for protection against both particulates and organic vapors are also available.

#### b. Atmosphere Supplying Respirators

These devices supply uncontaminated breathing air to the user from a source other than the surrounding atmosphere. These types are usually complex and come in many configurations.

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Atmosphere Supplying Respirators can be broken down into two subgroups.

Air Respirators, in which breathable air is conveyed to the user via a compressed air line or hose, and Self-contained Breathing Apparatus (SCBA), in which the user carries the breathing air sources which can be a compressed air tank or an oxygen generating device. See Appendices III and IV.

## 2. Selection Procedures

Selecting the proper respirator must be based on the hazard present, its concentration, and the form of the hazard (vapor, particulate, etc.).

## 3. Approved Respiratory Protective Equipment

OSHA requires that *approved* respirators be used if they are available. If only one brand of respirator on the market is approved for a particular hazard, then that brand is considered to be "available" and must be used.

An approved respirator is one that has been tested and found to meet minimum performance standards by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA). An approved respirator (by NIOSH) contains the following:

- An assigned identification number placed on each unit, e.g., TC-21C-101. The TC designation will always precede the identification number.
- A label identifying the type of hazard the respirator is approved to protect against.
- Additional information on the label which indicates limitations and identifies the component parts approved for use with the basic unit.



## II. MEDICAL ASPECTS OF RESPIRATORY PROTECTIVE EQUIPMENT

The use of any type of respirator imposes some physiological stress on the user. *Air-purifying respirators*, for example, make breathing more difficult because the filter or cartridge can reduce the flow of air. The special exhalation valve on an *open circuit pressure demand* SCAB requires you to exhale against resistance. The bulk and weight of an SCBA can be a burden. If you are using an *airline respirator*, you might have to drag up to 300 feet of hose around. All of these factors can increase the "total" workload. If you have lung or heart problems, wearing a respirator could present an unacceptable risk. You should have some type of medical examination to determine if you are able to wear a respirator without it affecting your health.

A medical examination by a physician is the preferred screening mechanism. The following conditions may affect your ability to wear a respirator, and if they exist, you should get a medical opinion.

- Lung
  1. Do you have a history of asthma or emphysema?
  2. Do you have difficulty in breathing?
  3. Do you have any documented lung problems?
- Heart
  1. Do you have high blood pressure?
  2. Do you have artery diseases?
  3. Do you have documented heart problems?
- Other
  1. Do you have missing or arthritic fingers?
  2. Do you have facial scars?
  3. Do you have claustrophobia?

### III. PROPER FITTING OF RESPIRATORY PROTECTIVE EQUIPMENT

Once a respirator has been selected for the contaminant to which you are exposed, and is appropriate for the airborne concentration, you are fully protected, right? Wrong! A respirator won't protect you unless the air you breathe goes through the "business end" — the canister, filter, or air supply system. If the face seal isn't tight or the connections are loose you may think you're breathing through it, but you will actually be breathing *around* it.

You may have to try on several different respirators before you find the one that fits properly. Your employer should have several types of respirators to choose from. Your employer must show you how to put the respirator on and how to adjust the straps for the best fit. The respirator should fit snugly, but it should not leave red marks, deep indentations on your face, or make it difficult to turn your head.

Beards and bushy sideburns may have to go, since respirator facepieces won't seal over them. Similarly, gum and tobacco chewing cannot be allowed since excess facial movement can break the face seal.

If you wear prescription glasses, you must wear a respirator facepiece which will accommodate the glasses (this is especially critical for full facepiece respirators). Contact lenses should not be worn while wearing a respirator. A properly fitted respirator — primarily a full facepiece respirator — will stretch the skin at the temples slightly so that the contact lens might pop out. Also, contaminants that do leak in around the sealing surface may get underneath the contact lens thus causing severe discomfort. Your first reaction would be to remove the facepiece to remedy the situation — which would be fatal in a lethal environment.

Two types of fitting tests are used to determine the proper fit of respiratory protective equipment: *qualitative tests* and *quantitative tests*. *Qualitative tests* are fast, usually simple, but not as accurate an indicator for improper fit as the quantitative test. The *quantitative test*, though more accurate, requires the purchase of expensive equipment, requires a specially trained operator, and is of limited use due to its complexity and bulk.

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## IV. MAINTENANCE OF RESPIRATORY PROTECTIVE EQUIPMENT

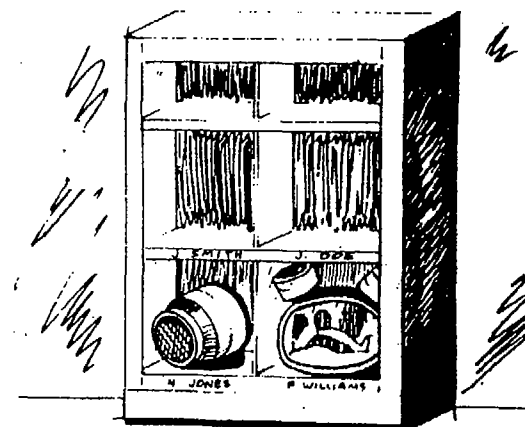
If you wear a respirator routinely it should be cleaned, inspected, and stored in a convenient location *after each use*.

### A. CLEANING AND STORAGE

At the end of the workshift the respirator should be cleaned and stored in a convenient, clean location. If the respirator is shared, it should be cleaned *and* disinfected between users. In a large respirator program there may be a central facility for cleaning. In a small program, you may be expected to clean your own respirator. If so, the following method may be used.

- Wash with a detergent or a combination detergent and disinfectant, in warm water using a brush.
- Rinse in clean water, or rinse once with a disinfectant and once with clean water. (The clean water rinse is particularly important because traces of detergent or disinfectant left on the mask can cause skin irritation or dermatitis.)
- Dry on a rack or hang from a clothes line. In either case position the respirator so that the facepiece rubber won't "set" crooked as it dries.

Proper storage of a respirator is very important. The law requires that respirators be protected from dust, sunlight, heat, extreme cold, excessive moisture, and damaging or contaminating chemicals. A storage cabinet for air-purifying respiratory protective equipment is shown below.



### B. INSPECTION

Inspection of the respirator is an important part of usage. You can further safeguard your health by performing (as appropriate) the below listed checks.

#### 1. Disposable respirators, check for:

- Integrity of the filter (for holes);
- Straps for elasticity and deterioration;
- Metal nose clip for deterioration (if applicable).

#### 2. Air-purifying respirators (quarter-mask, half-mask, full-facepiece, and gas mask):

##### a. Rubber Facepiece, check for:

- excessive dirt;
- cracks, tears, or holes;
- distortion from improper storage;
- cracked, scratched or loose fitting lens (full-facepiece);
- broken or missing mounting clips.

b. Headstraps, check for:

- breaks;
- loss of elasticity;
- broken or malfunctioning buckles or attachments;
- excessively worn serrations of the head harness which might allow the facepiece to slip (full-facepiece only).

c. Inhalation Valve, Exhalation Valve, check for:

- Detergent residue, dust particles, or dirt on valve or valve seat;
- Cracks, tears, or distortion in the valve material, or valve seat;
- Missing or defective valve cover.

d. Filter Element(s), check for:

- Proper filter for the hazard;
- Approval designation;
- Missing or worn gaskets;
- Worn threads — both filter threads and facepiece threads;
- Cracks or dents in filter housing;
- Deterioration of harness (gas mask canister);
- Service life indicator, or end of service date — for expiration (gas mask).

e. Corrugated Breathing Tube (gas masks), check for:

- Cracks;
- Missing or loose hose clamps;
- Broken or missing connectors.

3. Atmosphere-Supplying Respirators

a. Check facepiece, headstraps, valves, and breathing tube as discussed previously.

b. Hood, Helmet, Blouse, or Full Suit (if applicable), check for:

- Rips and torn seams;
- Headgear suspension;
- Cracks or breaks in faceshield;
- Protective screen to see that it is intact and fits correctly over the faceshield (abrasive blasting hoods and blouses).

c. Air Supply System, check for:

- Breaks or kinks in air supply hoses and end fitting attachments;
- Tightness of connections;
- Proper setting of regulators and valves (consult manufacturer recommendations);
- Correct operation of air purifying elements and carbon monoxide or high-temperature alarms.

d. Self-contained Breathing Apparatus (SCBA):

- Consult manufacturer's literature.

If defects are observed in a respirator, it must be removed from use until adequately repaired, or it must be replaced.

## C. REPAIR

Sooner or later your respirator will need a new part or some other repair. The law requires that the people who repair respirators be well trained. And it is important for everyone to realize that respirator parts from different manufacturers are not interchangeable. The NIOSH approval will not hold if an air hose or a gasket or any other part has been replaced by one from a different brand of respirator. This is true even if the respirator seems to work just as well with the substitute part.

## V. EMPLOYEE RESPONSIBILITIES

As a user of respiratory protective equipment, you also have responsibilities:

- Use respiratory protective equipment as instructed.
- Guard against damaging the respirator.
- Go immediately to an area of "clean" air if your respirator malfunctions.
- Report any malfunctioning of respiratory protective equipment to your supervisor. This would include but not be limited to:

- Discomfort;
- Resistance to breathing;
- Fatigue due to respirator usage;
- Interference with vision or communication;
- Restriction of movement.

It is impossible to cover briefly all the considerations that you should be familiar with because of the many types of respirators available. The manufacturer can supply much of the needed information. However, to be of value, it must be fully read and applied.

The appendices in this guide provide specific information on the general types of respirators most commonly in use. They are not all-inclusive, but do provide the basic information an employee should know about his particular respirator.

## APPENDIX I

### AIR-PURIFYING, PARTICULATE-REMOVING FILTER RESPIRATORS

#### A. DESCRIPTION

These are generally called "dust," "mist," or "fume" respirators, and by a "filtering" action remove particulates before they can be inhaled.

##### 1. Single-use, dust



Side view showing  
proper position of straps

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The single-use respirator is a respirator which is completely disposed of after use. They are for individual use and should be discarded when resistance becomes excessive or the respirator is damaged. Generally, these respirators are approved only for pneumoconiosis- or fibrosis-producing dust such as coal dust, silica dust, and asbestos.

## 2. Quarter-mask, dust and mist, and half-mask, dust and mist

The quarter-mask covers the mouth and nose; the half-mask fits over the nose and *under the chin*. The half-mask usually produces a better facepiece-to-face seal than does the quarter-mask and is therefore preferred for use against more toxic dusts and mists.

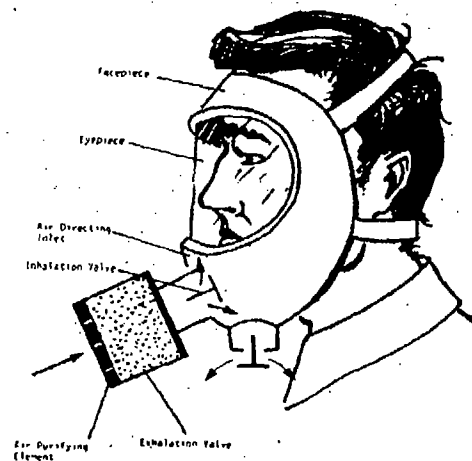
These dust and mist respirators are designed for protection against dusts and mists whose TLV is greater than .05 mg/M<sup>3</sup> or 2 mppcf.

## 3. Half-mask, high efficiency

This mask uses a high efficiency filter. Because of this high efficiency filter, this respirator can be used in atmospheres containing dusts, mists, fumes, or combinations of these forms where the TLV is *less* than .05 mg/M<sup>3</sup> or 2 mppcf.

## 4. Full facepiece

Full facepiece respirators cover the face from the hairline to below the chin. In addition to providing more protection to the face, the full facepiece gives a better seal than do the half- or quarter-masks. These respirators provide protection against dusts, mists, fumes, or any combination of these contaminants depending upon the type of filter used.



Typical full facepiece respirator.

## B. LIMITATIONS

- Air-purifying respirators do *not* provide oxygen, so they must *never be worn in oxygen-deficient atmospheres*.
- Particulate-removing air-purifying respirators offer *no* protection against atmospheres containing contaminant gases or vapors.
- These respirator types should not be used for abrasive blasting operations.

## C. PROBLEMS

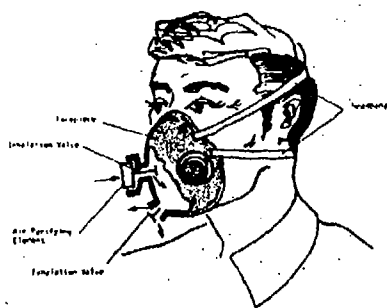
- The air flow resistance of a particulate-removing respirator filter element increases as the quantity of particles it retains *increases*, thus increasing the breathing resistance. *As a rule of thumb*, when comfortable breathing is impaired because of dust build-up, the filter should be replaced.
- Performance of some filter materials is affected by open storage in very humid atmospheres. Care should be taken in storing filter elements.

## APPENDIX II

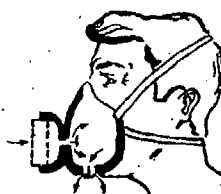
### AIR-PURIFYING, CHEMICAL CARTRIDGE AND CANISTER RESPIRATORS FOR GASES AND VAPORS

#### A. DESCRIPTION

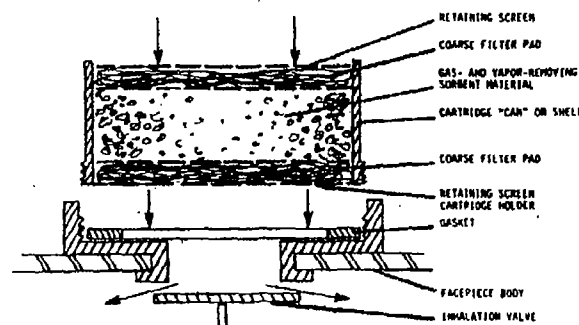
Vapor and gas-removing respirators use cartridges or canisters containing chemicals to trap or react with specific vapors and gases and remove them from the air breathed. The basic difference between a cartridge and a canister is the volume of the sorbent. Generally, a "cartridge" refers to a chemical filtering element which attaches directly to the facepiece, whereas a "canister" refers to the chemical filter element held in a harness and which is connected to the facepiece via a corrugated breathing tube. Some typical cartridge and canister respirators are shown below.



Typical half-mask respirator.



Typical quarter-mask respirator.



Typical chemical cartridge.

#### 1. Half-mask and Quarter-mask Chemical Cartridge or Canister Respirators

These are available for protection against single chemicals such as ammonia or against entire classes such as organic vapors. Be sure to read the label on the cartridge or canister since it tells what the cartridge or canister protects against, the maximum concentration in which the element can be used, and in some instances, the service life or expiration date of the element.

#### 2. Full facepiece

The full facepiece respirator may use a canister or cartridge(s) as the protective element. The front, back, and chin-mounted full-facepiece canister respirators are also referred to as "gas masks."

#### B. LIMITATIONS, CHEMICAL CARTRIDGE OR CANISTER

- These respirators do not supply oxygen, so they must *never be worn in oxygen deficient atmospheres.*
- They must not be used if the chemical to be protected against lacks adequate warning properties — odor, taste, or irritation, unless their use is permitted by applicable OSHA or MSHA standards. Warnings such as these are necessary to alert you that the sorbent is saturated, and the contaminant is passing through the cartridge or canister, and you are breathing contaminated air.

- They must not be used in atmospheres immediately dangerous to life or health, except for escape.
- They provide protection only from the specific gases or vapors they were designed to protect against (they may be worthless for other gases or vapors).

## APPENDIX III

### ATMOSPHERE SUPPLYING RESPIRATORS — SUPPLIED-AIR

Atmosphere-supplying respirators, rather than removing the hazardous material from the air, exclude the workplace air altogether and provide clean air from an independent source. There are two kinds of atmosphere supplying respirators: a *supplied-air respirator* in which the user is supplied with respirable air through a hose, and a *self-contained respirator* in which the user carries a supply of respirable air.

#### A. DESCRIPTION — SUPPLIED-AIR RESPIRATOR

Supplied-air respirators use a central source of breathing air that is delivered to the wearer through an air supply line or hose. There are essentially two major groups of supplied-air respirators — the airline device and the hose mask with or without a blower.

##### 1. Airline Devices

The distinction of airline devices is that they use a stationary source of compressed air delivered through a high-pressure hose. Airline devices can be equipped with half or full-face masks, helmets, or hoods, or the device can come as a complete suit. Airline respirators can be used for protection against either particulates, gases, or vapors. They provide a high degree of protection against these contaminants but they *cannot be used in at-*

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*mospheres immediately dangerous to life or health* because the user is completely dependent on the integrity of the air supply hose and the air source. If something happens to either the hose or air supply, he may not be able to escape from the contaminated area fast enough without endangering his life.

A great advantage of the airline respirator is that it can be used for long continuous periods. There are three types of airline respirators.

*a. Demand Airline Device*

In a demand device, the air enters the facepiece only on "demand" of the wearer, i.e., when the person inhales. This is due to the nature of the valve and pressure regulator. An example of a demand, half-mask airline device is shown below.



During inhalation there is a negative pressure in the mask, so if there is leakage, contaminated air may enter the mask and be breathed by the user. The leakage problem is a major drawback of the demand device. Demand devices are also available with a full-face mask, which provides a better seal than does the half-mask.

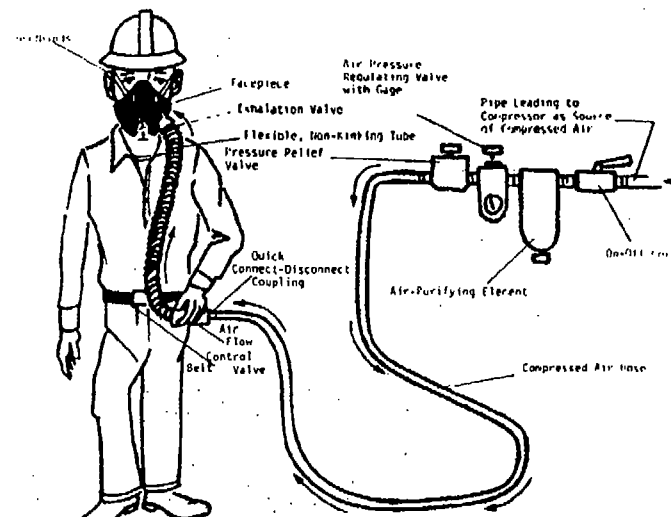
*b. Pressure Demand Airline Devices*

The pressure demand device has a regulator and valve design

such that there is a continuous flow (until a fixed static pressure is attained) of air into the facepiece at all times, regardless of the "demand" of the user. The airflow into the mask creates a positive pressure outward. As such, there is no problem of contaminant leakage into the facepiece. This is a significant advantage of this type of device.

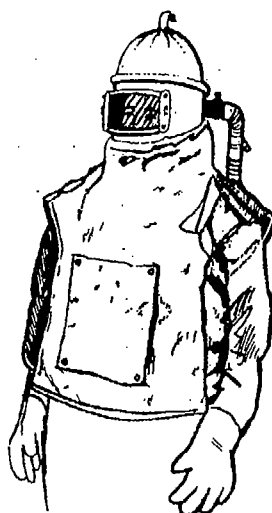
*c. Continuous-flow Airline Device*

The continuous-flow airline respirator maintains a constant airflow at all times and doesn't use a regulator, but uses an airflow control valve or orifice which regulates the flow of air. A continuous flow-full facepiece device is shown below.



The continuous-flow device creates a "positive" pressure in the facepiece, and as a result, does not have the problem of inward leakage of contaminant.

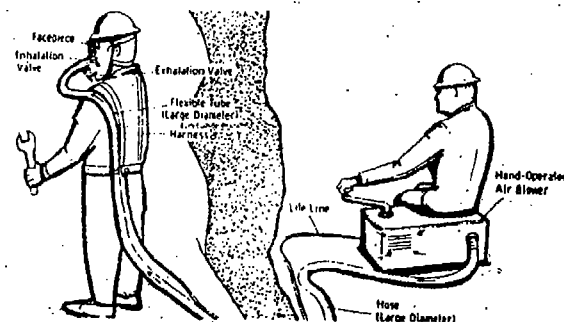
A special type of continuous-flow device that provides protection against flying particles of abrasive materials is also available. The abrasive blasting airline respirator, shown below, incorporates a loose fitting facepiece.



## 2. Hose Masks

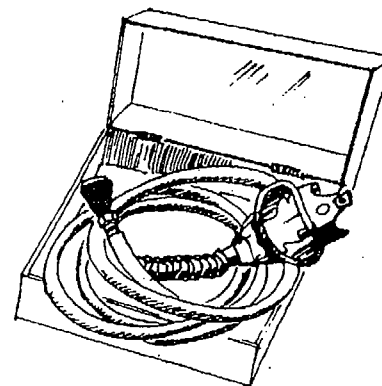
Hose masks supply air from an uncontaminated source through a strong, large diameter hose to the facepiece, and do *not* use compressed air or have any pressure regulating devices. (An advantage of the hose mask *with* a blower is its minimal resistance to breathing). Advantages of the hose mask *without* a blower are its theoretically long use periods and its simple construction, low bulk, easy maintenance, low initial cost, and minimal operating cost. Two types are available:

a. Those masks with hand or motor operated air blowers have a full facepiece mask. The hose length can be up to 300 feet. It must not be used in atmospheres immediately dangerous to life or health.



Hose mask respirator with hand operated blower.

b. Hose masks without blowers must have a tight fitting full facepiece. Helmets and hoods cannot be used. The hose mask without a blower can have up to 75 feet of hose.



Hose mask without Blower.

## B. LIMITATIONS

### 1. Airline Devices

a. These devices must not be used in atmospheres immediately dangerous to life or health since the user is dependent upon an air hose which, if cut, crushed, or damaged, leaves him with little or no protection.

b. The trailing air supply hose of the airline respirator severely restricts the wearer's mobility. This may make the airline respirator unsuitable for those who must move frequently between widely separated work stations.

### 2. Hose Mask

a. The hose mask with a blower cannot be used in atmospheres immediately dangerous to life or health because the low air volume flow may result in a negative pressure being produced in the mask during inhalation allowing contaminated air to leak into the mask. Also, if the air hose is cut or obstructed, the user will be unprotected.

b. The trailing air supply hose of the hose mask severely limits mobility, so it may be unsuitable if frequent movement among separated work stations is required.

c. A severe restriction of the hose mask without a blower is that it is limited to a maximum hose length of 75 feet. Also, it requires the wearer to inhale against the resistance to air flow offered by the air hose which may become significant during heavy work. Inhaling against this resistance may cause fatigue.

## APPENDIX IV

### ATMOSPHERE SUPPLYING RESPIRATORS — SELF-CONTAINED BREATHING APPARATUS (SCBA)

The self-contained breathing apparatus (SCBA) allows the user to carry a respirable breathing supply with him/her, and does not need a stationary air source such as a compressor to provide breathable air. The air supply may last from 3 minutes to 4 hours depending on the nature of the device.

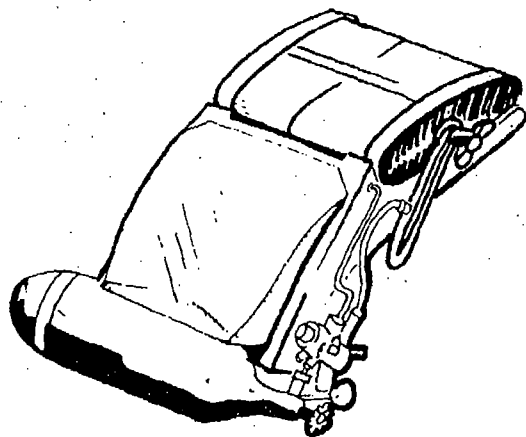
#### A. DESCRIPTION — SCBA

##### 1. Closed Circuit SCBA

Another name for closed circuit SCBA is "rebreathing" device. The air is rebreathed after the exhaled carbon dioxide has been removed and the oxygen content restored by a compressed oxygen source or an oxygen-generating solid. These devices are designed primarily for 1-4 hour use in toxic atmospheres. Because negative pressure is created in the facepiece during inhalation, there is increased leakage potential. Therefore, the devices should be used in atmospheres immediately hazardous to life and health only when their long-term use is necessary, as in mine rescue. Two types of closed circuit SCBA are available.

##### a. Compressed Oxygen Cylinder Type

In this device, breathable air is supplied from an inflatable bag. Exhaled air from the wearer is filtered to remove carbon dioxide and the oxygen consumed is replenished from an oxygen cylinder.



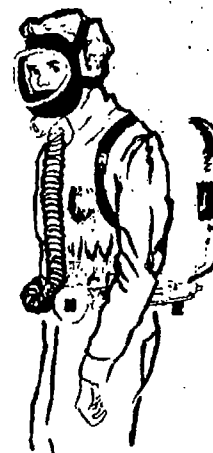
Typical oxygen-supplying closed circuit SCBA.

## 2. Open Circuit SCBA

An open circuit SCBA exhausts the exhaled air to the atmosphere instead of recirculating it. A tank of compressed air carried on the back, supplies air via a regulator to the facepiece. Because there is no recirculation of air, the service life of the open circuit SCBA is shorter than a closed circuit system. Two types of open circuit SCBA are available, "demand" or "pressure demand."

### a. Demand SCBA

In a demand SCBA, air flows into the facepiece only on "demand of the wearer," i.e., when the person inhales. This is due to the nature of the valves and pressure regulator. An example of a demand open circuit is shown below. During inhalation there is a negative pressure in the mask, so if there is leakage, contaminated air can enter the mask and be breathed by the user. The leakage problem is a major drawback of the demand device. Because of this problem, a demand type open circuit SCBA should not be used in atmospheres immediately dangerous to life or health.



Typical open circuit SCBA.

### b. Pressure Demand SCBA

The pressure demand open circuit SCBA has a regulator and valve design which maintains a positive pressure in the facepiece at all times regardless of the "demand" of the user. As such, there is no problem of contaminant leakage into the facepiece. This is a significant advantage of the pressure demand device. A pressure demand SCBA is identical in appearance to a demand SCBA, but has a different regulator assembly and facepiece exhalation valve design.

## 3. Combination Atmosphere Supplying Respirator: Supplied Air and SCBA

Designed primarily as a long duration device, this respirator combines an airline respirator with an auxiliary air supply (usually compressed air) to protect against the possible failure of the primary air supply (the airline). The additional supply can be approved for 15 minutes or even longer. The choice depends upon how long it would take to escape from the toxic atmosphere if the primary air supply failed.



Typical combination air line and SCBA respirator.

## B. LIMITATIONS

- The air supply is limited to the amount in the cylinder (SCBA's using a compressed air tank) and therefore the respirator cannot be used for extended periods without recharging or replacing the cylinders.
- Because these respirators are bulky and heavy, they are often unsuitable for strenuous work or use in confined spaces.
- Because of the *short* service time of the auxiliary air supply, the escape portion of the combination unit can be used only for escape from atmospheres Immediately Hazardous to Life or Health (IDLH) unless the escape portion has a minimum of 15 minutes service life. Such devices can then be used for entry into immediately dangerous to life or health atmospheres, provided not more than 20% of the available breathing supply is used. These devices may always be used for entry into IDLH atmosphere when utilized with the external air supply.

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## RESPIRATOR MAINTENANCE

### I. Program Elements

- A. Inspection for Defects
- B. Cleaning & Disinfecting
- C. Repair
- D. Storage

### II. INSPECTION FOR DEFECTS

Inspect before and after each use.

- A. Check face piece for dirt, cuts, tears, holes, melting, stiffening, crushing, cracked lenses, incorrectly mounted lenses, or cartridge elements.
- B. Inspect headband for breaks, frays, tears, or loss of elasticity.
- C. Check for bent or missing hardware.
- D. Check exhalation system for proper function.
- E. Check for dust, dirt, cracks or tears in the valve flap or valve seat of the exhalation system.
- F. Check inhalation valves for rust and dirt. Check seats for cuts, cracks, and nicks. Inspect valve flaps for cuts or tears.
- G. Check cartridge threads for stripping; if worn replace. Look for cracks in the cartridge housing.
- H. If breathing resistance develops, change the filter.
- I. If contaminants are detected through the cartridge, replace the cartridge.
- J. Check cannister's expiration date, discard if expired. Check for incorrect cartridge for the hazard or for incorrect installation of cartridge.

### III. CLEANING AND DISINFECTING

Clean and disinfect respirators weekly.

- A. Remove the air purifying elements.
- B. Remove dirt and debris from face piece surface. Never use organic solvents to accomplish this.
- C. Wash respirator in warm water using a detergent. Scrub with a soft brush if necessary.
- D. A reliable disinfectant such as chlorine bleach should be used with water to remove any bacteria. Use a solution of 5ml of household bleach in 1 gal of water. Immerse the respirator in this solution for at least 2 min.
- E. Rinse respirator in clean, warm water.
- F. Allow respirator to air dry on a clean surface.

### IV. REPAIRS

- A. Respirators which need repairs should be discarded and replaced with new ones.

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V. STORAGE

- A. Protect respirator from heat, cold, dust, sunlight, and chemicals.
- B. Place the freshly cleaned and disinfected respirator in a plastic bag ("Baggie") until ready for reuse.
- C. Store respirators in a single layer in their normal position.

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SELF-CONTAINED BREATHING APPARATUS

MONTHLY CHECKLIST

INSPECTION INSTRUCTIONS

\_\_\_\_\_  
 Date

|  |                                    |  |                             |
|--|------------------------------------|--|-----------------------------|
|  | Mask - deterioration or distortion |  | Side Strap                  |
|  | Breathing Tube                     |  | Control Lever               |
|  | Chest Buckle                       |  | Locking Tab                 |
|  | Quick Connect Coupling             |  | Regulator Hose Coupling     |
|  | Regulator                          |  | Cylinder Pressure Gauge     |
|  | Waist Belt                         |  | Clamping Lever              |
|  | Shoulder Strap                     |  | Cylinder and Valve Assembly |
|  | Regulator Pressure Gauge           |  | Cylinder Valve Knob         |
|  | By-Pass Valve                      |  | Cleanliness Of Unit         |
|  | Shut-Off Valve                     |  | Carrying Case               |

Preparation For Use

1. Check cylinder pressure gauge for "full" indication. If pressure indicated is below "full", recharge cylinder or replace with fully charged cylinder.
2. Check that regulator shut-off valves are in closed position.
3. Check all strapping, both rubber and fabric, for signs of wear or deterioration. Mask straps should be stretched slightly to check for rubber decay.

Signed \_\_\_\_\_

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Date \_\_\_\_\_

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**McKesson**  
**Operations**

| Section                                     | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY                              | 10.90      | 1              |     |
| Subject                                     | Issue Date | Effective Date |     |
| SERVICE CENTER SAFETY AND COMPLIANCE REVIEW | 9/15/85    | 9/15/85        |     |

**GENERAL**

Safety in McKesson Chemical has been defined as the necessary level of discipline in the work place to protect the worker from injuries and undesirable health conditions, assure quality, prevent losses to machinery and equipment, diminish or delete liabilities, reduce insurance premiums, comply with government regulations, and protect customers and the public.

To assure that a strong positive effort is directed toward fulfilling the above objectives, a Safety and Compliance Review shall be conducted quarterly at each Chemical Group facility. Two reviews each year should be conducted by the appropriate Area Operations Manager, one by the appropriate Regional Operations Manager, and one by a delegate. The Area Operations Manager will coordinate Service Center Reviews for his Area.

The Review is designed to assist the facility manager in developing and maintaining the high standards necessary to achieve the above objectives. The Review is a team effort and is always performed in a constructive manner, recognizing the myriad of tasks normally associated with managing a facility.

The Area Director, with the assistance of the facility Operations Manager and the Area Operations Manager, is responsible for making corrections as required. Regional and/or Home Office staff may also be called upon for assistance as necessary. It is the responsibility of the Area Director, through the facility and Area Operations Managers, to maintain the standards required to fulfill the above objectives.

**REVIEW**

The form used for the Safety and Compliance Review (Exhibit 1) has been revised to emphasize items which have a greater impact on the safe operation of the facility. The form is intended to be used for all four Reviews in a year. In this way, changes in the status of an item can be tracked.

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**McKesson**  
**Operations**

| Section                                     | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY                              | 10.90      | 2              |     |
| Subject                                     | Issue Date | Effective Date |     |
| SERVICE CENTER SAFETY AND COMPLIANCE REVIEW | 9/15/85    | 9/15/85        |     |

REVIEW  
(Cont.)

The Action Report in Exhibit 2 is designed to summarize the Review items needing attention. The Action Report is a courtesy to the managers.

The Review form itself is divided into nine sections as follows:

Section I - Office and Documentation

This section is designed to review recordkeeping, training, documentation, procedures, etc., as well as all of those activities which on a short inspection would not normally be expected to be observed as they occur, i.e., safety meetings, emergency response, etc.

Section II - Warehouse

This section covers the Warehouse and Dock areas. This requires an actual visual inspection. Some items, such as inspection of fire extinguishers, housekeeping, electrical outlets, etc., which are listed in this area should be kept in mind when reviewing the yard and repack facilities since there is an effort to avoid repetition in the sections.

Section III - Transportation

This section inspects the vehicles on site during the Review and requires a visual inspection.

Section IV - Hazardous Waste

This section reviews the storage of hazardous waste at facilities permitted to do so. A visual inspection is required.

Section V - Liquid Repack at Yard

This section covers the physical area and equipment devoted to Liquid Repack and requires a visual on-site inspection.

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**McKesson**  
**Operations**

| Section                                     | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY                              | 10.90      | 3              |     |
| Subject                                     | Issue Date | Effective Date |     |
| SERVICE CENTER SAFETY AND COMPLIANCE REVIEW | 9/15/85    | 9/15/85        |     |

REVIEW  
(Cont.)

Section VI - Dry Repack

This section covers the physical area and equipment devoted to the dry repacking and requires a visual on-site inspection.

Section VII - Laboratories

This section is to be used wherever a laboratory facility is in place, regardless of the size and scope. A lab facility, for purposes of this Review, is considered to be one housed in a separate room(s) and containing laboratory equipment sufficiently sophisticated so as to require a trained operator or technician.

Section VIII - Compressed Gas Repack

This section is to be used for those facilities that repack chlorine, anhydrous ammonia, or sulfur dioxide and covers the physical area and equipment devoted to the compressed gas repacking and requires a visual on-site inspection.

Section IX - Bulk Chlorine Facilities

This section covers facilities that transport chlorine in bulk. It requires a visual inspection.

INSTRUC-  
TIONS

1. Review forms as specified in Exhibit 1 will be used at each facility.
2. Review forms will be periodically updated based on field experience, new regulations and oversights.
3. Additional items should be written on Review form where need is indicated. For example, additional items may be needed where:
  - a. A truck maintenance shop is located.
  - b. Unusual water treatment facilities are located.

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**McKesson**  
**Operations**

| Section                                     | Reference  | Page           | End |
|---|------------|----------------|-----|
| GENERAL SAFETY                              | 10.90      | 4              | X   |
| Subject                                     | Issue Date | Effective Date |     |
| SERVICE CENTER SAFETY AND COMPLIANCE REVIEW | 9/15/85    | 9/15/85        |     |

INSTRUC-  
TIONS

- c. Unusual equipment is used, e.g., sand blasters.
- d. Water wells or septic tanks are used.
- e. Local government criteria involves different conditions.
- f. The Review needs to be made more responsive and meaningful.
4. Indicate by check (✓) mark in proper column relative performance of each item.
5. N/A designates non-applicability.
6. Many items require probing questions.
7. Each item checked as "Needs Improvement" must be commented on at the bottom of the page.  
(Cross-reference comments to number.)
8. Reviews are to be discussed with local managers promptly upon completion.
9. Complete the Action Report to summarize the Review for management.
10. Each audit is to be conducted in a positive, constructive manner, with the common goal of assisting the facility to achieve those standards necessary to meet the objectives stated at the beginning of each Review form.

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1ST 2ND 3RD 4TH  
 QUARTER QUARTER QUARTER QUARTER

QUARTERLY SAFETY & COMPLIANCE  
 REVIEW

LOCATION \_\_\_\_\_

|   |                         |                         |                         |
|---|-------------------------|-------------------------|-------------------------|
| BY<br>_____   | BY<br>_____             | BY<br>_____             | BY<br>_____             |
| Date:<br>_____                                      | Date:<br>_____          | Date:<br>_____          | Date:<br>_____          |
| AUDIT RESULTS<br>NI:Needs Improvement FAV:Favorable |                         |                         |                         |
| NI FAV  | NI FAV                  | NI FAV                  | NI FAV                  |
| _____<br>_____<br>_____                             | _____<br>_____<br>_____ | _____<br>_____<br>_____ | _____<br>_____<br>_____ |

I. OFFICE & DOCUMENTATION

A. General

1. ONE PERSON CLEARLY IN  
 CHARGE OF SAFETY AND  
 HEALTH ACTIVITIES.

NAME \_\_\_\_\_

2. Company rules, general safety policy, state or federal posters as required, and diagram of fire extinguisher locations and evacuation routes prominently displayed where all employees are likely to see them.

3. Current emergency telephone numbers posted by each phone.

COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

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I. OFFICE & DOCUMENTATION  
 (Cont.)

A. General (Cont.)

4. Halon-type fire extinguisher in office.

B. Emergency Preparations

5. Spill control procedures on hand and training documented.

6. Emergency drills conducted semi-annually (at least) and documented.

Date of last drill:

C. Fire Protection

7. Local fire department familiar with facility and products stored. Visit documented.

Date of last visit:

8. (Reserved)

9. Personnel trained and documented in the use of fire extinguishers and fire planning annually.

Date of last training:

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |

COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

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I. OFFICE & DOCUMENTATION  
 (Cont.)

D. Safety

10. SAFETY COMMITTEE  
DESIGNATED. MEETINGS  
MONTHLY AND DOCUMENTED.
11. OFFICE WORK AREAS FREE  
OF FIRE AND SAFETY  
HAZARDS.
12. A nearby hospital,  
 clinic, or infirmary for  
 medical care designated  
 for emergency use.  
  
 Name \_\_\_\_\_
13. One or more employees  
 trained in first aid.  
 One on premises.  
  
 Name(s) \_\_\_\_\_
14. Hazard Communications  
 Orientation Conducted.  
 Date of Initial  
 Orientation: \_\_\_\_\_  
 Date of last  
 followup: \_\_\_\_\_
15. ALL ACCIDENTS  
INVESTIGATED: REMEDIAL  
ACTION PROPOSED AND  
REPORTED AS PER  
OPERATIONS MANUAL.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |

COMMENTS:

1st Quarter: \_\_\_\_\_  
 \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_  
 \_\_\_\_\_

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I. OFFICE & DOCUMENTATION  
(Cont.)

E. Training

16. Defensive Driving classes conducted annually and documented for all drivers of Company vehicles.
17. Check rides conducted annually and documented for all drivers of Company vehicles.
18. Forklift operators trained and issued Operator's Certificates (OSHA).
19. Personnel trained annually and documented in the use of respirators (OSHA).

F. Regulatory

20. Current Material Safety Data Sheets accessible for all products stored by the service center. Distribution documentation current and signed B/L filed. Hazard Communications Program available.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40351

MK094761

MKIL189352

I. OFFICE & DOCUMENTATION  
 (Cont.)

F. Regulatory (Cont.)

21. Reports of security, insurance, government, etc., inspections available; positive action taken where needed.
22. Drivers' DOT qualification files current.
23. OSHA Form 200 (Workplace Injury and Illness Record) kept current within 6 days.
24. OSHA record retention in compliance.
25. DOT exemptions on file for any exemption containers shipped by the service center; noted on B/L.
26. Neutralization pit disposal records properly recorded and maintained.
27. Repack instruction sheets with job tickets signed by operator & supervisor.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40352

MK094762

MKIL189353

I. OFFICE & DOCUMENTATION  
 (Cont.)

G. Maintenance & Security

28. Annual written certification from an outside electrician that the grounding system has 50 OHMS resistance (max) and is adequate for Class I Group D flammable areas.

Last Date: \_\_\_\_\_

29. Perimeter locks conform to Operations Manual (Section 60.01); access to keys restricted; changed as appropriate and documented.

30. Keys to vehicles, alarm systems, perimeter locks, etc., issued against receipts and duplicates secured in a locked cabinet, desk or box.

31. Intrusion alarms tested at least monthly and documented.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40353

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MKIL189354

I. OFFICE & DOCUMENTATION  
 (Cont.)

G. Maintenance & Security  
 (Cont.)

- 32. Written procedures on hand and readily available to all personnel for all repack processes including bulk loading and unloading, washing, drumming, bagging, etc.
- 33. Driver's logs and driver's daily reports prepared as per procedure. Logs forwarded to Area monthly.
- 34. McKesson Tachograph Program in place and conducted properly.
- 35. First aid kits fully stocked, inspected monthly and documented.
- 36. EMERGENCY RESPONSE EQUIPMENT MAINTAINED, SEGREGATED, SEALED, INSPECTED MONTHLY AND DOCUMENTED.
- 37. Preventative Maint. Program in place, responsibilities assigned, actions.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
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 2nd Quarter: \_\_\_\_\_  
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 3rd Quarter: \_\_\_\_\_  
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 4th Quarter: \_\_\_\_\_  
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MKIL40354

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MKIL189355

G. Maintenance & Security  
(Cont.)

- | Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

**MKIL40355**

MK094765

II. WAREHOUSE

A. General

- 39. McKesson compatibility storage and coding program posted with coding manual kept current with inserts from Operations Manual (Section 40.01).
- 40. Switches and switch panels unobstructed and clearly marked indicating voltage/function.
- 41. All exits unobstructed and marked with a properly illuminated sign kept unlocked while personnel are at work.
- 42. Balcony/mezzanine used for storage marked as to load capacity - has rails and toeboard (OSHA).
- 43. No evidence of poor sanitation - bird or rodent droppings.
- 44. INVENTORY STACKED SAFELY AND NEATLY 4" FROM WALLS, NO EVIDENCE OF LEAKING BAGS OR SPILLS.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40356

MK094766

MKIL189357

II. WAREHOUSE (Cont.)

A. General (Cont.)

45. USP, NF, FCC, AND FOOD  
GRADE MATERIALS STORED  
ON CLEAN, DEDICATED  
PALLET, AND SEGREGATED.

46. Pallet racks properly  
utilized and in compli-  
ance with compatibility  
storage procedures.

B. Fire Protection

47. FORKLIFTS EQUIPPED WITH  
FULLY CHARGED AND  
SECURED FIRE  
EXTINGUISHERS.

48. Fire extinguishers  
mounted in readily  
accessible locations  
within 50 ft of each  
other; Type 30# BC or  
ABC.

49. Fire extinguishers  
tagged showing annual  
recharge date and  
initialed with monthly  
inspections.

50. Fire extinguishers and  
fire hoses unobstructed  
for access.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40357

MK094767

MKIL189358

II. WAREHOUSE (Cont.)

B. Fire Protection (Cont.)

51. A minimum 18" clearance is maintained below sprinkler heads.

C. Dock

52. WHEEL CHOCKS AVAILABLE AND USED: SIGNS POSTED AT LOADING DOCK(S).
53. DISCONNECTED TRAILERS CHOCKED AND SUPPORTED DURING LOADING OR UNLOADING.
54. Truck/rail dock plates kept in serviceable condition and secured to prevent slipping when in use.
55. Safety shower/eye wash (if any on dock) functioning and unobstructed.
56. Loaded material on trailers/straight trucks properly secured with hazardous materials accessible.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40358

MK094768

MKIL189359

C. Dock (Cont.)

61. (RESERVED)

NI FAV.

1st Quarter:

2nd Quarter:

3rd Quarter:

4th Quarter:

MK094769

III. TRANSPORTATION

- 62. DELIVERY EQUIPMENT PRESENTS A POSITIVE COMPANY IMAGE. ID NUMBERS AND DECALS IN PLACE.
- 63. CHEMTREC number posted on dash or inside door, and on exterior.
- 64. Emergency equipment: warning devices, flashers, fuses, min. 10 lb BC extinguisher in place.
- 65. Tachographs and speedometer on all power units functioning.
- 66. Trailer and truck boxes, side racks in good repair; Floor Condition: mud guards, placard holders, etc., in place.
- 67. Lights and glass uncracked, no body or running gear defects.
- 68. Lift gates are in a safe operable condition.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
| — —       | — —    | — —    | — —    |
| — —       | — —    | — —    | — —    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

**MKIL40360**

MK094770

MKIL189361

II. TRANSPORTATION (Cont.)

69. T/T hoses and discharge valves capped or plugged. Internal valves and emergency shutoffs operable without leakage.
70. Bulk delivery equipment and portable tanks show DOT test and test-due dates.
71. TIRES MEET MINIMUM TREAD DEPTHS - ANY PORTION (FRONT 1/8", REAR 1/16"). TIRES MATCHED BY TYPE (RADIALS W/RADIALS).
72. All vehicles secured overnight to protect both contents and equipment.
73. Current Material Safety Data Sheets for hazardous chemicals accessible. Hazard Communications Program available.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
| — —       | — —    | — —    | — —    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40361

MK094771

MKIL189362

**IV. HAZARDOUS WASTE ACTIVITIES**

**A. Records and Documentation**

- 74. Required permits and state and federal reports current and on file.
- 75. Handling/Adm. Procedures Booklet on hand.
- 76. Emergency/contingency plans up-to-date. Receipts available showing plan submitted to local emergency service organizations.
- 77. Inventory records current on all receipts and shipment of wastes for storage.
- 78. Operational Log & required inspections current for waste storage functions.
- 79. Personnel training records and assignments current on appropriate employees for waste storage functions.
- 80. Manifest file review: (Note any lacking items on any manifest and manifest sets.)

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
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**COMMENTS:**

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

**MKIL40362**

MK094772

MKIL189363

IV. HAZARDOUS WASTE ACTIVITIES  
 (Cont.)

A. Records and Documentation  
 (Cont.)

- a. Generator name, address & phone number.
- b. EPA I.D. number; handwritten signature.
- c. Transporter(s) name, address, and phone number.
- d. Transporter(s) EPA I.D. number; handwritten signature.
- e. Designated T/S/D facility name, address, and phone number.
- f. T/S/D's EPA I.D. number.
- g. Name, type, and quantity of hazardous waste being shipped; proper DOT descriptions, hazards class, & UN number.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — — —     | — — —  | — — —  | — — —  |
| — — —     | — — —  | — — —  | — — —  |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40363

MK094773

IV. HAZARDOUS WASTE ACTIVITIES

A. Records and Documentation  
 (Cont.)

- h. Special handling instructions or authorization number if required by State.
- i. Full waste stream analysis.
- j. Consolidation manifest for our shipping from storage to disposal facility.

B. Storage

Storage Inspection Checklist: (Note any item NOT present or not being done properly.)

- 81. a. Waste analyses on hand for all streams accepted.
- b. Full logging procedure followed for all waste material accepted.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40364

MK094774

MKIL189365

**IV. HAZARDOUS WASTE ACTIVITIES**  
 (Cont.)

**B. Storage (Cont.)**

82. a. Does the storage facility have records of daily inspection?
- b. Are all containers securely closed and in the proper waste storage area?
- c. Are wastes segregated by type?
- d. Are all hazardous waste labels clearly visible?  
 No previous labels visible?
- e. Are all waste containers stored with access for daily inspection of each for leakage?
- f. Is the number of containers less than or equal to the number stated on the location's permit/closure plan?

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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**COMMENTS:**

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

**MKIL40365**

MK094775

MKIL189366

IV. HAZARDOUS WASTE ACTIVITIES  
 (Cont.)

B. Storage (Cont.)

83. a. Are facility personnel trained and the training documented per Part B Permit specifications?

Date of last training session:

- b. Are drivers trained in accepting proper containers and manifests/hazardous waste handling?

- c. Are all personnel familiar with security procedures and controlling access to storage site?

- d. Are training records kept for at least three years?

- e. Are semi-annual emergency drills held involving all assigned employees, with notice and coordination with local authorities?

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40366

MK094776

MKIL189367

IV. HAZARDOUS WASTE ACTIVITIES  
 (Cont.)

B. Storage (Cont.)

84. a. Is there an emergency alarm system in the area of hazardous waste storage? Adequate?
- b. Is the location's emergency response equipment properly inventoried and maintained? Complete per Part B Permit?
- c. Are emergency contingency names and phone numbers current? Available?
- d. Is the storage area in good condition, no cracks or defects in dikes, floors, etc. Fully meets Part B Permit specifications.
85. All wastes stored in appropriate containers, in good condition, labeled, and dated.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40367

MK094777

MKIL189368

IV. HAZARDOUS WASTE ACTIVITIES  
 (Cont.)

B. Storage (Cont.)

86. RCRA required  
 "DANGER-UNAUTHORIZED  
 PERSONNEL KEEP OUT"  
 signs at each facility  
 entrance/exit.
87. No unmarked containers  
 of waste requiring  
 analysis or identifica-  
 tion for disposal.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
| — —       | — —    | — —    | — —    |

COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40368

MK094778

V. LIQUID REPACK AND YARD

88. All safety equipment maintained and accessible.
89. REPACK INSTRUCTION SHEET PROPERLY USED BY OPERATOR.
90. a. Approved labels on hand before repack, and properly applied to drums; UN numbers applied where needed.
- b. MSDS on each product, and written procedures on hand and readily available to all personnel for all repack processes including bulk loading and unloading, washing, drumming, bagging, etc.
91. USP repack area equipment and piping in clean condition, with caps in place.
92. Bulk and repack samples retained per Operations Manual.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40369

MK094779

MKIL189370

V. LIQUID REPACK AND YARD  
 (Cont.)

93. Scales check tested prior to each use and certified within past 6 months. Test Date(s):  
 \_\_\_\_\_
94. Confirm at least two people in attendance during packaging or bulk loading and unloading.
95. Transfer hoses carry monthly inspection tag. Test dates recorded.
96. WORK AREAS UNCLUTTERED AND CLEAR FOR EMERGENCY EGRESS.
97. SAFETY SHOWERS/EYE WASH FUNCTIONING AND UNOBSTRUCTED.
98. Electrical panels/ switches/conduit identified and in good condition and unobstructed.
99. Grounding system in good condition: Each drum clipped where applicable. Tools spark-proof.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40370

MK094780

MKIL189371

V. LIQUID REPACK AND YARD  
 (Cont.)

- 100. All metal tanks properly grounded.
- 101. Filling module operated to confirm mechanically safe operable condition.
- 102. EXHAUST VENTING AT MODULE AND WASH RACK OPERABLE AND ADEQUATE.
- 103. Transfer hoses and lines drained into proper containers. Unused hoses capped and racked.
- 104. No unidentified material stored on site.
- 105. On-site waste disposed of properly.
- 106. Corrosive repack floors maintained.
- 107. NO EVIDENCE OF LINE OR HOSE DRAINAGE TO DIKES; NO DRIPPAGE FROM VALVES.
- 108. DIKES IN GOOD CONDITION WITHOUT CRACKS; DRAIN VALVES OPENED ONLY TO RELEASE TESTED WATER.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40371

MK094781

MKIL189372

V. LIQUID REPACK AND YARD  
 (Cont.)

- 109. All tankage valves closed except as needed.
- 110. STORAGE TANKS MAINTAINED AND CONTENTS IDENTIFIED USING NFPA SIGNALS AND McKESSON LABELS.
- 111. Fixed lines and storage tanks identified by product using McKesson brand labels.
- 112. Tank gauges operable, gauge glasses clear.
- 113. Product transfer from T/T or T/C to filling area is fixed lines for direct filling of hazardous materials.
- 114. Pump maintenance. No seal leakage; necessary drip from packed shafts contained.
- 115. Inbound driver warning signs posted at unloading station.
- 116. Loading platforms in safe condition.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
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 2nd Quarter: \_\_\_\_\_  
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 3rd Quarter: \_\_\_\_\_  
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 4th Quarter: \_\_\_\_\_  
 \_\_\_\_\_

MKIL40372

MK094782

MKIL189373

V. LIQUID REPACK AND YARD  
 (Cont.)

- 117. Neutralization tanks intact or covered; in operable condition with pump & testing system working. Only permitted products for neutralization (acids & caustics) ever go into wash water/neutralization system; no solvents, chlorinateds, hydrocarbons, etc., are ever washed or released into this system.
- 118. OSHA guards on compressors. Warning sign in place.
- 119. Recovery drums empty and available for emergencies.
- 120. Rail siding clean of spilled products and trash.
- 121. Product and empty drums in outside storage stacked neatly. Poly drums 3 high, max.
- 122. Flammable drums stored in OSHA maximum groups of 40 drums; away from buildings.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40373

MK094783

MKIL189374

V. LIQUID REPACK AND YARD  
 (Cont.)

- 123. Evidence of spillage on paving leading to possible regulatory censure.
- 124. Pallets stacked safely; broken pallet accumulation limited.
- 125. Trash receptacles away from building and dock.
- 126. Fuel pumps secured when not in use; "NO SMOKING" and "ENGINE OFF" signs displayed.
- 127. Current Material Safety Data Sheets for hazardous chemicals accessible. Hazardous Communications Program available.
- 128. Sample bottles labeled in accordance with the Hazard Communications Program.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40374

MK094784

MKIL189375

VI. DRY REPACK FACILITIES

A. General

- 129. Operators trained and documented for all machinery.
- 130. Spills recovered and rebagged on each lot or run.
- 131. Broken bags repaired or rebagged daily.
- 132. Bags properly stacked and stored.
- 133. Product dust effectively contained.

B. Safety

- 134. Floors free of material/shipping hazards.
- 135. Eye protection and respiratory protection provided and used.
- 136. Employees handling bags are trained in proper lifting techniques; training documented.
- 137. "Machine Starts Automatically" signs in place as appropriate.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40375

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MKIL189376

VI. DRY REPACK FACILITIES  
 (Cont.)

B. Safety (Cont.)

- 138. Scales certified/  
checked; random bags  
regularly spot-checked  
and documented.
- 139. Blowers/dust collectors/  
vents functional at all  
times.
- 140. Belt/chain guards in  
place.
- 141. a. Rail siding clean  
with cars chocked  
and derails in  
place.  
b. siding in good  
condition with  
proper drainage.
- 142. Current Material Safety  
Data Sheets for  
hazardous chemicals  
accessible. Hazard  
Communications Program  
available.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40376

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VII. LABORATORIES

A. General

- 143. Written procedures are available for all tests performed.
- 144. All test results are recorded only in bound notebooks.
- 145. Supporting data for all tests (instrument readings, calculations, etc.) always recorded in notebook.
- 146. Laboratory waste disposed of in labeled waste containers.
- 147. Spills are immediately cleaned up; housekeeping adequate.

B. Safety

- 148. Fume hood is functional and unobstructed.
- 149. Gas cylinders secured and upright.
- 150. Emergency phone numbers posted.
- 151. Guard rails on storage shelves.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

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B. Safety (Cont.)

- | Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — — —     | — — —  | — — —  | — — —  |
| — — —     | — — —  | — — —  | — — —  |
| — — —     | — — —  | — — —  | — — —  |
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| — — —     | — — —  | — — —  | — — —  |

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL189379

VIII. COMPRESSED GAS REPACK

A. Training/Documentation/Records

156. Packaging procedures available to personnel in supervisor's office.
157. Compressed Gas Association and Chlorine Institute pamphlets available to personnel.
158. Each employee trained and documented for tasks assigned him.
159. Container inspection, filling, testing, destruction forms used and retained on file.
160. Employees authorized to test containers registered with DOT.  
 Name(s) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
161. Hydrostatic test equipment DOT registration current:  
 Last Dated \_\_\_\_\_

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

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VIII. COMPRESSED GAS REPACK  
 (Cont.)

B. Safety/Emergency Procedures

- 162. Personnel provided and carry escape respirators.
- 163. Eye protection program enforced.
- 164. EMERGENCY ALARM FUNCTIONING. LAST TEST DATE: \_\_\_\_\_
- 165. Minimum 18" windsock in place, in sight of other personnel.
- 166. Emergency phone numbers (including neighbors) posted in area.
- 167. AUTOMATIC SHUTDOWN EQUIPMENT OPERABLE. LAST TESTED: \_\_\_\_\_
- 168. EMERGENCY KITS LOCATED APPROPRIATELY AND SEALED.
- 169. All lines color coded and paint maintained.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

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VIII. COMPRESSED GAS REPACK  
 (Cont.)

B. Safety/Emergency Procedures  
 (Cont.)

170. Current Material Safety Data Sheets for hazardous chemicals accessible. Hazard Communications Program available.

171. CHLOREP emergency response team personnel identified, training documented.

172. CHLOREP refresher training provided within last 6 months.

Last Date: \_\_\_\_\_

173. Emergency response vehicle in complete readiness.

174. Safety signs in place.

C. Procedures

175. All containers evacuated and inspected internally prior to filling.

176. Pressure/vacuum gauges operational at proper stations.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MKIL40381

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MKIL189382

VIII. COMPRESSED GAS REPACK  
(Cont.)

C. Procedures (Cont.)

- 177. Devalving operations are such to limit back injuries.
- 178. Exposure of container openings limited to prevent thread corrosion.
- 179. All cylinders inverted for foot ring and corrosion inspection.
- 180. Maximum 30 PSIG air pressure at work bench (OSHA).
- 181. All rebuilt valves tested to 500 psig.
- 182. Ton fuse plugs replaced with new plugs at each re-test.
- 183. Container wash station efficiently ventilated.
- 184. Fill station piping, flex hose or tubing, valves in safe operable condition.
- 185. Filling scales certified in last 6 months.

Last date(s): \_\_\_\_\_

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40382

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MKIL189383

VIII. COMPRESSED GAS REPACK  
(Cont.)

C. Procedures (Cont.)

- 186. Ton lift devices at scales in safe operable condition.
- 187. Only approved flex connections used at fill stations.
- 188. Containers properly stencilled and labeled per DOT and EPA.
- 188. Vacuum systems efficient for operational safety.
- 190. Compressor belt guards and signs in place (OSHA).
- 191. Air dryers functional.  
Last tested: \_\_\_\_\_
- 192. Chemical goggles or equivalent required and used in bleach and caustic area.
- 193. Pumps and piping maintained in safe operating condition in bleach/sulfite/aqua areas.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
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COMMENTS:

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

MKIL40383

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### C. Procedures (Cont.)

195. Compressed gas piping  
and hoses depressured  
during off hours.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| — —       | — —    | — —    | — —    |
| — —       | — —    | — —    | — —    |

1st Quarter: \_\_\_\_\_

2nd Quarter: \_\_\_\_\_

3rd Quarter: \_\_\_\_\_

4th Quarter: \_\_\_\_\_

MMH 40384

MK094794

**IX. BULK CHLORINE FACILITIES**

- 196. Tank truck angle valves rebuilt per DOT; each rebuild and test documented.
- 197. All tankers within next test-due date.
- 198. TRACTORS EQUIPPED WITH OPERABLE 2-WAY COMMUNICATION.
- 199. Bulk deliveries are via preplanned route.
- 200. Truck scales certified annually, checked with public scale each quarter.  
  
Last Date: \_\_\_\_\_
- 201. Loading hoses inspected monthly, tested quarterly.

| Standards |        |        |        |
|-----------|--------|--------|--------|
| NI FAV    | NI FAV | NI FAV | NI FAV |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |
| ---       | ---    | ---    | ---    |

**COMMENTS:**

1st Quarter: \_\_\_\_\_  
 2nd Quarter: \_\_\_\_\_  
 3rd Quarter: \_\_\_\_\_  
 4th Quarter: \_\_\_\_\_

**MKIL40385**

MK094795

MKIL189386

# SAFETY & COMPLIANCE REVIEW

## ACTION REPORT

SERVICE  
CENTER: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REVIEWED WITH: \_\_\_\_\_

| Item<br>Number | Repeat | Description of Item | Corrective Action to be Taken | Date to<br>be Cor-<br>rected<br>by | Person(s)<br>Respon-<br>sible for<br>Correc-<br>tion(s) | Date<br>Correction<br>Completed |
|----------------|--------|---------------------|-------------------------------|------------------------------------|---|---------------------------------|
| MKIL 40386     |        |                     |                               |                                    |   |                                 |

COPIES TO: Regional Vice President  
Regional Operations/Safety Manager  
Area Director  
S. C. Operations Manager

CHEM OP 10.90 Exhibit 2  
9/15/85  
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MKIL189387



MKIL40387

MK094797

MKIL189388

CUSTOM LABELS AVAILABLE  
ALLIED TYPESETTING, INC.

| <u>LABEL<br/>NUMBER</u> | <u>NAME</u>                                 | <u>CURRENT<br/>DATE</u> | <u>NET WT</u> |
|-------------------------|---|-------------------------|---------------|
| A-101                   | Dry Alum                                    | 1185                    | None          |
| A-102                   | Anhydrol, PM-4135                           | 1185                    | None          |
| A-103                   | Anhydrol, PM-4157                           | 1185                    | None          |
| A-104                   | Anhydrol, PM-4078                           | 1185                    | None          |
| A-105                   | Liquid Alum                                 | 1185                    | None          |
| A-106                   | Ammonium Thiosulfate Solution               | 1285                    | 600           |
| A-107                   | Anhydrol, PM-4081                           | 1285                    | 366           |
| A-108                   | AP-73R                                      | 1285                    | None          |
| A-109                   | Anhydrol, PM-4084                           | 0186                    | 360           |
| A-110                   | AP-62                                       | 0186                    | 513           |
| A-111                   | Anhydrol, PM-4085                           | 0186                    | 366           |
| A-112                   | Alfol 6                                     | 0286                    | 350           |
| A-113                   | Alfol 8                                     | 0286                    | 350           |
| A-114                   | Anhydrol, PM-4080                           | 0286                    | 366           |
| A-115                   | Acetic Acid, 84%                            | 0286                    | 450           |
| A-116                   | Alfol 10                                    | 0286                    | 350           |
| A-117                   | Alfol 12                                    | 0286                    | 350           |
| A-118                   | Alfol 14                                    | 0286                    | 350           |
| A-119                   | Alfol 16                                    | 0286                    | 350           |
| A-120                   | Alfol 18                                    | 0286                    | 350           |
| A-121                   | Alfol 1618                                  | 0286                    | 350           |
| A-122                   | Alfol 1216                                  | 0286                    | 350           |
| A-123                   | Alfol 1218                                  | 0286                    | 350           |
| A-124                   | n-Amyl Acetate                              | 0286                    | 400           |
| A-125                   | Acetic Acid, 56%                            | 0386                    | 450           |
| A-126                   | Acetic Acid, 90%                            | 0386                    | 450           |
| A-127                   | Antimony Trioxide                           | 0486                    | 50            |
| A-128                   | All Brite Lacquer Thinner                   | 0786                    | 420           |
| A-129                   | Anhydrol (R) Solvent,<br>PM-4083, 200 Proof | 0886                    | 357           |
| B-100                   | Sec-Butyl Alcohol                           | 0286                    | 369           |
| B-101                   | n-Butyl Alcohol                             | 0386                    | 374           |
| B-102                   | Benzyl Alcohol, NF                          | 0386                    | 460           |
| B-103                   | Betz Energy Blend                           | 0686                    | 455           |
| C-100                   | CycloSol 63                                 | 1185                    | None          |
| C-101                   | Cyclesolv 60                                | 1185                    | None          |
| C-102                   | Chlorothene SM Solvent                      | 0186                    | 592           |
| C-103                   | Chelaclean 103B                             | 0186                    | None          |
| C-104                   | Cyclesolv 99                                | 0286                    | None          |
| C-105                   | Carbowax (R) Polyethylene<br>Glycol 300     | 0386                    | 510           |
| C-106                   | Cyclohexanol                                | 0486                    | 425           |
| C-107                   | Cyclohexylamine                             | 0586                    | None          |

MKIL40388

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MKIL189389

**CUSTOM LABELS AVAILABLE  
ALLIED TYPESETTING, INC.**

| <u>LABEL<br/>NUMBER</u> | <u>NAME</u>                    | <u>CURRENT<br/>DATE</u> | <u>NET WT</u> |
|-------------------------|--------------------------------|-------------------------|---------------|
| C-108                   | Caustic Soda, Liquid, 20%      | 0586                    | 550           |
| C-109                   | Chacon #17                     | 0686                    | 2482          |
| C-110                   | Chacon #101                    | 0686                    | 2501          |
| D-100                   | N,N-Diethylethanolamine        | 1285                    | 405           |
| D-101                   | DDBSA                          | 1285                    | 450           |
| D-102                   | Dipropylene Glycol             | 0186                    | 474           |
| D-103                   | Dowfax 2A1 Solution Surfactant | 0386                    | 530           |
| D-104                   | Dolco Blend                    | 0686                    | 568           |
| D-105                   | Dalpad (R) A Coalescing Agent  | 0786                    | 505           |
| E-100                   | 2-Ethylhexanol                 | 0386                    | None          |
| E-101                   | 2-Ethylhexoic Acid             | 0386                    | 419           |
| E-102                   | Ethylenediamine                | 0886                    | 3350          |
| F-100                   | Filmcol C-2, 190 Proof         | 0386                    | 366           |
| F-101                   | Flokem #0092                   | 0586                    | 550           |
| G-100                   | Glycol Ether DM                | 1185                    | None          |
| G-101                   | Glycol Ether PM Acetate        | 0386                    | None          |
| G-102                   | Glycerine 96%, USP             | 0786                    | 315           |
| H-100                   | Hexane                         | 1185                    | None          |
| H-101                   | Heptane                        | 0186                    | 333           |
| I-100                   | Isophorone                     | 1185                    | None          |
| I-101                   | Isopropyl Acetate              | 0286                    | None          |
| I-102                   | Isobutyl Alcohol               | 0386                    | 369           |
| I-103                   | Isopropyl Alcohol, 91%         | 0386                    | 369           |
| I-104                   | Ink Solvent PM-6127            | 0686                    | 357           |
| L-100                   | Lockheed Blend C41683          | 0586                    | 380           |
| M-100                   | McKSolv 805                    | 1285                    | None          |
| M-101                   | McKSolv 820                    | 1285                    | None          |
| M-102                   | McKSolv 41                     | 1285                    | 419           |
| M-103                   | McKSolv 815                    | 1285                    | None          |
| M-104                   | McKWet 9.5N                    | 1285                    | None          |
| M-105                   | McKWet 9.5N                    | 1285                    | 480           |
| M-106                   | N-Methylpyrrolidone            | 1285                    | None          |
| M-107                   | Mineral Oil, Feed Grade        | 1285                    | 385           |
| M-108                   | McKSolv 60                     | 0186                    | 335           |
| M-109                   | McKSolv 32                     | 0186                    | 600           |
| M-110                   | McKSolv 61                     | 0186                    | 592           |
| M-111                   | McKWet AL 1285-03              | 0186                    | 480           |

MKIL40389

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MKIL189390

**CUSTOM LABELS AVAILABLE  
ALLIED TYPESETTING, INC.**

| <u>LABEL<br/>NUMBER</u> | <u>NAME</u>                      | <u>CURRENT<br/>DATE</u> | <u>NET WT</u> |
|-------------------------|----------------------------------|-------------------------|---------------|
| M-112                   | McKWet AL 1285-04                | 0186                    | 480           |
| M-113                   | McKWet AL 1285-05                | 0186                    | 460           |
| M-114                   | McKSolv DLR                      | 0186                    | None          |
| M-115                   | McKSolv 59                       | 0186                    | 2160          |
| M-116                   | McKSolv TX                       | 0286                    | 382           |
| M-117                   | McKSolv 42                       | 0386                    | None          |
| M-118                   | Monoisopropanolamine             | 0386                    | 440           |
| M-119                   | McKSolv Flushsolv #7             | 0486                    | None          |
| M-120                   | McKSolv 68                       | 0486                    | None          |
| M-121                   | McKSolv 69                       | 0586                    | 460           |
| M-122                   | McKSolv 70                       | 0586                    | 545           |
| M-123                   | Methyl Amyl Ketone               | 0586                    | 366           |
| M-124                   | White Mineral Oil 70% Tech       | 0786                    | 385           |
| M-125                   | McKSolv 73                       | 0786                    | None          |
| M-126                   | Methanol Ethyl Acetate Blend     | 0886                    | 375           |
| M-127                   | Mineral Oil 6970                 | 0986                    | 1850          |
|                         |                                  |                         |               |
| N-100                   | Neodol 23-3                      | 0386                    | 410           |
| N-101                   | Neodol 91-2.5                    | 0386                    | 410           |
| N-102                   | Neodol 25-9                      | 0786                    | 440           |
| N-103                   | Neodol 91-8                      | 0786                    | 440           |
| N-104                   | Neosol 190                       | 0886                    | 366           |
|                         |                                  |                         |               |
| O-100                   | Oleic Acid 1005                  | 0186                    | 400           |
| O-101                   | Oleic Acid 1010                  | 0186                    | 400           |
|                         |                                  |                         |               |
| P-100                   | n-Propyl Acetate                 | 1285                    | 404           |
| P-101                   | n-Propyl Acetate                 | 1285                    | None          |
| P-102                   | Pluronic L-62                    | 0386                    | 460           |
| P-103                   | Platowash #1                     | 0486                    | 383           |
| P-104                   | Propylene Dichloride             | 0686                    | 520           |
| P-105                   | Propionic Acid                   | 0786                    | 420           |
| P-106                   | Propasol Solvent P               | 0786                    | 405           |
| P-107                   | Propylene Glycol, USP            | 0786                    | 265           |
| P-108                   | Polyol P 70%                     | 0886                    | 600           |
|                         |                                  |                         |               |
| R-100                   | Ragu Caustic Blend               | 0586                    | None          |
|                         |                                  |                         |               |
| S-100                   | Shell Sol B                      | 1185                    | None          |
| S-101                   | Shell Sol 140                    | 1185                    | None          |
| S-102                   | Synasol, PM-3224                 | 1185                    | None          |
| S-103                   | Synasol, PM-509                  | 1185                    | None          |
| S-104                   | Sellers Solvent                  | 0286                    | 385           |
| S-105                   | Stearic Acid Flux                | 0386                    | 417           |
| S-106                   | Synasol Solvent PM-41, 190 Proof | 0486                    | 367           |
| S-107                   | Sanitek Rosin Blend              | 0686                    | 357           |

**MKIL40390**

MK094800

MKIL189391

Chem Op 20.30  
9/15/86  
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Exhibit 3  
9/15/86

**CUSTOM LABELS AVAILABLE  
ALLIED TYPESETTING, INC.**

| <u>LABEL<br/>NUMBER</u> | <u>NAME</u>                       | <u>CURRENT<br/>DATE</u> | <u>NET WT</u> |
|-------------------------|-----------------------------------|-------------------------|---------------|
| T-100                   | Tergitol NP-9                     | 0186                    | 480           |
| T-101                   | Tergitol NP-10                    | 0186                    | None          |
| T-102                   | Triton DF-12                      | 0286                    | 450           |
| T-103                   | Triton DF-16                      | 0286                    | 450           |
| T-104                   | Triton H-55                       | 0286                    | 525           |
| T-105                   | Triton H-66                       | 0286                    | 525           |
| T-106                   | Tamol 731, 25%                    | 0286                    | 500           |
| T-107                   | Tricresyl Phosphate               | 0386                    | 530           |
| T-108                   | Tripropylene Glycol               | 0386                    | 470           |
| T-109                   | Tetrapotassium Pyrophosphate, 60% | 0586                    | 700           |
| T-110                   | T-Chem Blend                      | 0686                    | None          |

MKIL40391

MK094801

MKIL189392

**McKesson**  
**Operations**

| Section                     | Reference  | Page           | End |
|-----------------------------|------------|----------------|-----|
| REPACK                      | 20.31      | 1              |     |
| Subject                     | Issue Date | Effective Date |     |
| LABEL APPLICATION PROCEDURE | 9/15/85    | 9/15/85        |     |

GENERAL

Considerable effort has been extended in selecting a label stock and an adhesive which, under proper conditions of application, provide permanence and good adhesive qualities for a variety of surfaces. In order to insure McKesson Chemical Group's compliance with DOT regulations, safety in general, and to minimize product and personnel liability exposures, it is essential that all Chemical Group locations follow the procedures set forth.

SCOPE

This applies to all adhesive-backed labels supplied by McKesson Chemical Group and most particularly to labels with one corner cut on the diagonal. The latter is the new label stock.

EQUIPMENT  
NEEDED

A firm rubber roller, obtainable from a Marsh stencil system, 2" x 3-1/2" or equivalent. Although this is an ink stencil roller, it works well in the label application.

Safety containers for handling: Methylene Chloride, VMP Naptha Mixture; Methanol, VMP Naptha Mixture.

Respiratory equipment for use with Methylene Chloride or Methanol Mixtures.

PROCEDURE

The best adhesive in the world will not adhere to a dirty (chemical or other), soiled surface. The drum surface, whether plastic or steel, must be cleaned to provide a receptive surface for the label adhesive. Except in conditions of extreme cold, no other glue is needed to achieve a label placement with satisfactory adhesion.

Step 1

Prepare a 1:1 (equal volumes) mixture of Methylene Chloride - VMP Naptha, which will be referred to as Mixture A; and a 1:1 (equal volumes) mixture of Methanol and VMP Naptha, which will be referred to as Mixture B.

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**McKesson**  
Operations

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| LABEL APPLICATION PROCEDURE | 9/15/85    | 9/15/85        |     |

PROCEDURE  
(Cont.)

Step 2

(a) In the case of wet or moist steel or plastic container surface, using the safety precautions below, wipe the drum surface with a clean rag lightly wetted with Methanol. Allow to dry. Proceed to Step 3.

(b) In case of soiled plastic containers, using a clean rag lightly wetted with Mixture A, vigorously wipe off the label area surface on the drum. Proceed to Step 3.

(c) In case of a soiled steel drum, using a clean rag lightly wetted with Mixture B, vigorously wipe off the label area surface on the drum. Proceed to Step 3.

Step 3

Allow the drum surface to dry.

Step 4

Remove the label backing, then contact the container surface with the approximate center of the label, quickly contact the remaining label area by pressing with outward sweeps toward the label edges. Label should be properly aligned and neat.

Step 5

Immediately using firm strokes (center to edges), roll the label surface with a firm rubber roller. By doing this, good contact will result between the label and the drum surface.

Step 6

Return excess labels to storage. Clean rubber roller.

SAFETY

In carrying the above procedures, follow these precautions:

1. Use the solvent mixtures in well ventilated area.
2. Use protective hand cover.
3. Avoid inhalations of vapors.
4. Avoid open flames.

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SAFETY  
(Cont.)

5. Store cleaning rag in clean metal container.
6. Store solvents in a clean closed metal container out of sun, away from ignition sources.

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**McKesson**  
Operations

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| Subject       | Issue Date | Effective Date |     |
| CODE LABELING | 9/15/85    | 9/15/85        |     |

GENERAL

In the past, there have been two types of code labeling. The first of these, Type A, involved placing an identifying name or number on a container in addition to the product label. In this case, no label or information on the label was removed. Customers requested this type of code labeling because it minimized formulation errors on the part of operators who may not be able to read chemical names. Type A code labeling is really no more than placing a customer's identification on a container. Since no hazard information is removed from a container Type A code labeling may be used when requested. No additional formal approval is required beyond that normally needed for the transaction involved.

The second type of code labeling was known as Type B. Here, the customer required an identifying name or number be placed on the container, instead of the product label. Customers requested Type B code labeling because they wished to keep secret the identities of the products involved. However, the OSHA Hazard Communication Standard, and its state and local counterparts, no longer permit product secrecy for many products. Consequently, Type B code labeling is no longer allowed for those products.

Type B code labeling will be permitted only in cases where all chemicals involved are non-hazardous according to the Hazard Communication Standard. Non-hazardous chemicals are those which do not have a DOT hazard classification, do not have a TLV or PEL, or do not meet certain other criteria. Contact the Technical Director at Home Office for advice on specific chemicals. To obtain Type B code labeling approval, submit your request to your Area Operations Manager and Area Director. After their approval, the request is sent to the Technical Director at Home Office. Upon his approval, a Product Code number will be assigned, repack or purchase approval granted, and a RIS issued.

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| REGISTRATIONS OF PRODUCTS, PLANTS, AND<br>FIXED EQUIPMENT | 9/15/85    | 9/15/85        |     |

**GENERAL**

Various federal, state, and local laws or regulations require the registration or permitting of products, plants, process equipment, and storage tanks. It is imperative that Operations management at Service Centers, Area, Region, or Home Office level, communicate knowledge of any such requirement and provide the necessary assistance and information to ensure that the appropriate registration/permit application is filed. The following is a summary of permitting responsibility and procedures for submitting of such applications and compliance with reporting requirements.

**1. Federal Permits**

Application to register a product and/or plant as required by federal regulations or law is filed by Home Office Chemical Technical Director. It should be borne in mind that these are federal registrations or permitting requirements which are applicable on a national basis. Renewal and/or revision of existing federal permits will likewise be handled by Home Office. However, should any reports be required for any permit filed, the responsibility for submitting the required reports rests with the Service Center, Area, or Regional Operations Manager, as appropriate and assigned.

It should be borne in mind that there are federal registration or permitting requirements which are not applicable on a national basis. Such registration/permits must be filed on a local basis (example: ATF, DOT cylinder test certification, etc.).

**2. State Permits**

Applications to register or secure a permit for a product, plant, equipment, or tank(s) as required by state regulations or law, will be filed by the Regional Compliance Manager. Renewals or revision of such registrations will also be handled by the Regional Compliance Manager.

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| REGISTRATIONS OF PRODUCTS, PLANTS, AND<br>FIXED EQUIPMENT | 9/15/85    | 9/15/85        |     |

**GENERAL**  
**(Cont.)**

The Area Operations Manager is responsible for filing of any required reports. However, if a single report involving two or more Service Centers is required, he shall provide the Regional Compliance Manager with the necessary information for him to file a consolidated report.

**3. Local Permits**

Applications to register or secure any permits required by local authorities (county, city, village, etc.) and which are applicable to a specific facility, will be filed by Area Operations Manager.

The Area Operations Manager is responsible for the filing, renewal, or revision of such permits and to see that any required reporting requirements are complied with.

**4. Renewal/Revision of Applications for Federal/State/Local Registrations**

- a. Any required renewal or revision of any of the above registration(s) or permit(s) will be handled at the same level at which the original registration/application was filed.
- b. The Service Center Operations Manager shall maintain a file and monitor all registrations/permits and advise the responsible person prior to their expiration to assist in timely renewal or revision.

**SPECIFIC**

The following is a summary of basic requirements of various federal agencies for which McKesson Chemical is presently registered through Home Office.

**1. Environmental Protection Agency (EPA)**

- a. RCRA - Facility Registration/Permitting

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**Operations**

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| REGISTRATIONS OF PRODUCTS, PLANTS, AND<br>FIXED EQUIPMENT | 9/15/85    | 9/15/85        |     |

SPECIFIC  
(Cont.)

Facilities which generate, transport, store, or dispose of hazardous wastes must be registered and permitted under the Resource Conservation and Recovery Act. Applications for establishment to be permitted as a generator, transporter, or T/S/D are to be referred to Area Operations Manager who will request Home Office to file an application.

- b. The appropriate state agency (DNR, PCA, NCB, etc.) is also involved in the processing of a RCRA application. Home Office will handle both simultaneously.

2. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

- a. Definition - "Pesticide," under FIFRA, is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest (insect, rodent, nematode, fungus, weed, bacteria, etc., except micro-organisms on or in living man or animals); and any substance or mixture of substances intended for use as plant regulator, defoliant, or desiccant.
- b. Product Registration - All pesticides sold or distributed in the U.S. must be registered. Applications are submitted to the EPA Office of Pesticide Programs in Washington, D.C., along with supporting data (efficacy, hazard potential, etc.) and proposed labeling. If approved, the product will be assigned a number which must appear on the label.

A product(s) which must be registered with USEPA may also require registration with an appropriate state agency. The Area Operations Manager shall file the appropriate registration application as required.

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| REGISTRATIONS OF PRODUCTS, PLANTS, AND<br>FIXED EQUIPMENT | 9/15/85    | 9/15/85        |     |

SPECIFIC  
(Cont.)

- c. Establishment Registration - All pesticide-producing establishments (including pesticides repackaging sites) must be registered. The establishment registration number must appear either on the label or on the container. (For pesticides repackaged for us by an outside firm, that firm's establishment number must be shown, not ours. However, the label will still bear McKesson registration number for the product itself.)

(1) Applications for establishment registration are submitted by Home Office to the EPA regional office having jurisdiction over the state in which our headquarters is located, i.e., in San Francisco.

(2) EPA will mail directly to the registered establishment a form for reporting production data, etc. The plant returns it to the EPA regional office having jurisdiction over the state in which the establishment is located. After the initial filing, reports are to be submitted annually on or before February 1.

3. Federal Food, Drug, and Cosmetic Act (FDA)

- a. Definition - In addition to several other classes of products, any USP or NF grade material is defined as a "drug" under the Federal Food, Drug, and Cosmetic Act.
- b. Owners or operators of all drug establishments (including repackers and relabelers) must register each establishment and submit a list of every drug in commercial distribution. Establishment registrations are renewed annually; companies whose names begin with the letter "M" must submit the form by April of each year. Drug listing updates are required every June and December (or optionally as the changes occur).

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**Operations**

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**SPECIFIC**  
**(Cont.)**

- c. For USP or NF grade materials repackaged for us by an outside firm, the drug listing form must show that firm's establishment number and our product code for the material itself. Neither number is required on the label; however, the establishment must have on file a label signed and dated by the person or persons responsible for approval of such labeling.
4. Department of Agriculture (USDA)
  - a. The USDA and/or departments or divisions thereof have jurisdiction of chemicals used under this scope of authority.
  - b. This agency publishes an annual edition of "List of Chemical Compounds Authorized for Use Under USDA Meat, Poultry, Rabbit, and Egg Products Inspection Programs."
  - c. Compounds evaluated and authorized by letters after issue of the publication are also acceptable. Once a compound appears in the subsequent edition, the letter is no longer valid as proof of authorization.
  - d. No registration numbers or certificates are issued.
5. Alcohol, Tobacco, and Firearms (ATF)
  - a. The Department of Treasury Bureau of Alcohol, Tobacco, and Firearms regulates the distribution and use of denatured alcohol. Establishment registration, as well as product registration, is required. Significant detail as to equipment, formulas, product, etc., must be submitted with application. Area Operations Manager shall develop necessary information and data and, with the assistance and approval of Home Office Technical Director, will file the applicable permit applications.

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**McKesson**  
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| REGISTRATIONS OF PRODUCTS, PLANTS, AND<br>FIXED EQUIPMENT | 9/15/85    | 9/15/85        |     |

**SPECIFIC  
(Cont.)**

- b. Specific reporting requirements are mandatory. Such reports shall be filed by the Service Center Operations Manager in the prescribed manner and form.

**6. Other Registration:**

- a. As stated above, there exists a variety of federal, state, or local laws, regulations, or ordinances, some of which may require registration or permits. It is incumbent on the Service Center Operations Manager to be aware of such requirements and to initiate a request for assistance in ensuring compliance therewith.
- b. New or revised regulation may impact storage tanks, fume removal equipment, neutralization pits, etc. The Service Center Operations Manager shall inform the Area Operations Manager of any proposed or adopted regulations which may impact our repackaging operation.

**MKIL40401**

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**McKesson**  
Operations

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| CUSTOM PACKAGING | 9/15/85    | 9/15/85        |     |

GENERAL

Custom packaging may be defined as performing a packaging service (drums, cans, bags, etc.) to the specification of the customer for an agreed sum. Such packaging could involve:

1. Customer owned product into the customer's container or McKesson's container,
2. McKesson owned product into the customer's container or McKesson's container, or
3. Customer owned product from McKesson storage into tank trucks or tank cars (terminalizing) which may or may not be either the customer's or McKesson owned (leased) units. The product may or may not be a blend or formulated mix, and the label may or may not be a McKesson label.

Custom packaging requests are expected to increase primarily because:

1. McKesson is better facilitated than in the past to perform such functions.
2. McKesson has generated greater acceptance and confidence in its ability to perform such functions.
3. Freight factors and other economic considerations lead the potential customer to seek out national capabilities.
4. Waste control, air/water pollution, OSHA, and other regulatory acts certainly influence this trend.
5. Liability awards and McKesson's ability to carry high insurance protection also are considerations not overlooked.
6. Some packaging is simply undesirable, and the customer may well desire to pass the problems on to someone else.

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**Operations**

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| CUSTOM PACKAGING | 9/15/85    | 9/15/85        |     |

HOME  
OFFICE  
APPROVAL

As with all packaging, it is Company policy that each custom packaging proposal receive formal Home Office approval prior to any commitment. Also, if an approved custom packaging agreement is terminated, or if there is no packaging activity for six months, it is not to be renewed without Home Office re-approval.

The regular "Request to Repack" form should be used. Recognizing that the form does not address itself to all necessary considerations, it should be accompanied with:

1. A separate narrative detailing the understanding with the customer, as well as a copy of the proposed agreement stating all specifications, lab tests, procedures, etc. (See Reference 20.71.)
2. Copy or facsimile of the label indicating source of same.
3. Copy of MSD sheet.
4. Worksheet showing your cost:
  - a. Estimated to perform packaging (should be detailed and show all component parts of cost, e.g., materials, labor, overhead, etc., on a unit basis.)
  - b. Selling price/unit.
  - c. Total units involved.
  - d. Estimated net profit, total and/or incremental.
5. Estimates and details of additional equipment or personnel required.
6. Credit approval.

Custom packaging approval requests should be initiated by functionally concerned, Area and Regional staff, as well as Regional Vice President, and will be expedited through the appropriate departments in Home Office.

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**Operations**

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| CUSTOM PACKAGING | 9/15/85    | 9/15/85        |     |

**CONSIDERA-  
TIONS**

Dependent upon the product(s), location, and other specifics, the following is a partial list of concerns that necessarily will have to be addressed before any approval or agreement may be made:

1. Legal (indemnification, penalties, contract approval, etc.).
2. Insurance (requirements for certificates of insurance).
3. Taxes (inventory, alcohol, etc.).
4. Hazards (employees, public, protective equipment, etc.).
5. Pollution (air, water, waste).
6. Economics (Is it in our interest?).
7. Facilitation (protective storage, space, adequate/proper equipment, dedicated equipment, etc.).
8. Training (sophistication and expertise required).
9. Transportation (adequate equipment, tie-up of equipment).
10. Time demands or constrictions.
11. Marketing impact (conflict with program).
12. Material management systems (productivity, storage, inventory, etc.).
13. Supplier relations (other agreements in conflict).
14. Customer relations (support to competition, etc.).
15. Quality control (lab requirements - sensitivities).

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**Operations**

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CONSIDERA-  
TIONS  
(Cont.)

16. Administrative (reports, compensation, record-keeping, shipping papers).
17. Label (adequate; meet regulatory requirements, etc.).
18. Permits or governmental approvals or product registration (EPA, FIFRA, and other federal, state and local).
19. Compatibility.
20. Container (compliance, protection, etc.).
21. Any special handling required.

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MKIL189406

## McKesson Operations

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| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/01/86    | 6/01/86        |     |

### CONTRACTS

An agreement to custom repack must be in a contract form, whether it be issued by the customer or by the McKesson Chemical Group. The following contract form for custom packaging has been drafted by the Law Department as a sample guide to assist our repack operations in developing a contract where it is deemed necessary.

Additions, deletions or modifications of this format may be required to fit the particular arrangement. A draft of the final agreement negotiated is to be submitted to the Law Department for review prior to signing such agreement. Assistance in drafting any additions or modifications will also be provided by the Law Department.

### SAMPLE CONTRACT

A sample contract for custom packaging begins on the next page.

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**McKesson**  
**Operations**

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| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/30/86    | 6/30/86        |     |

**CUSTOM REPACK AGREEMENT**

**AGREEMENT** made as of this \_\_\_\_ day of \_\_\_\_\_, 198\_,  
between McKesson Chemical Company, a division of McKesson  
Corporation, a Maryland corporation, having an office at \_\_\_\_\_  
("McKesson") and \_\_\_\_\_, a \_\_\_\_\_  
[corporation, partnership, or sole proprietorship] having an  
office at \_\_\_\_\_ ("Customer").

**RECITALS**

McKesson is in the business, among other things, of  
repackaging various chemicals at facilities operated by it  
at various locations throughout the United States.

Customer is desirous of having McKesson package for it,  
its requirements of certain chemical products (the  
"Products") at the McKesson Service Center(s) located at  
\_\_\_\_\_ (the "Facilities").

**AGREEMENTS**

(i\* Use if the services are to be provided for a set term)

1. Term. This Agreement shall be (i\* for a term commencing \_\_\_\_\_, 198\_ and ending \_\_\_\_\_, 198\_.) (ii\* one year in duration, effective \_\_\_\_\_ and shall continue in full force and effect

# McKesson Operations

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| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/30/86    | 6/30/86        |     |

(ii\* Use if the services are to be provided until the Agreement is terminated) thereafter unless and until terminated as of the end of the contract year by at least ninety (90) days prior written notice by either party to the other. If either party has not fully complied with any of the terms hereof, either party may terminate at any time upon thirty (30) days prior written notice.)

2. Products. The Products to be packaged for Customer and its estimated requirements therefor are listed on Schedule "A" hereto. The specifications for the Products are set out on Schedule "B" hereto.

(iii\* Use where Customer supplies containers) 3. Containers. The Products are to be packaged in \_\_\_\_\_ (the "Containers") to be supplied by \_\_\_\_\_. (iii\* McKesson will examine the Containers only to discover if they contain foreign matter or obvious defects, but McKesson shall not, by reason of such examination, assume any responsibility or liability for the condition of such Containers or as to their suitability for the use to which Customer has instructed they be put.)

(iv\* Use where McKesson supplies containers) (iv\* Since McKesson is not a manufacturer of containers, it represents only that such containers are of the kind and quality described herein. Customer shall review the specifications therefor and shall approve same for use hereunder. McKesson makes no other warranty or representation express or implied, regarding such Containers.) Compliance with DOT requirements shall be the responsibility of the shipper.

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# McKesson Operations

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4. Labels. Copies of all labels, decals and stencils to be attached or affixed to the Containers ("labels") are attached as Exhibit "1" hereto. Any specifications for attaching or affixing same are set forth on Schedule "C" hereto. The labels have been prepared by (v\* Use where Customer supplies labels) (v\* Customer which is solely responsible for their contents. Customer represents and warrants that the labels are accurate, in compliance with applicable law, and adequate to fully advise McKesson and others of the safety requirements and hazards associated with the storage, handling and use of each of the Products.) (vi\* McKesson and have been approved by Customer.)

5. Material Safety Data Sheets. Copies of all current Material Safety Data ("MSD") sheets for the Products are attached as Exhibit "2" hereto. The MSD sheets have been provided by (vii\* Use where Customer supplies the MSDS) (vii\* Customer which is solely responsible for their contents. Customer will, during the life of this Agreement, continue to provide McKesson with the most current MSD sheets for each of the Products. Customer represents and warrants that all MSD sheets will be accurate, in compliance with applicable law, and adequate to fully advise McKesson and others of the safety requirements and hazards associated with the storage, handling and use of each of the Products, and that Customer will comply with applicable law in regard to providing the MSD sheets to others.) (viii\* McKesson and have been approved by Customer. Customer will comply with applicable law in regard to providing the MSD sheets to others.)

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# McKesson Operations

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6. Bulk Chemicals. McKesson shall maintain at its facilities, the Products in bulk stock (the "bulk chemicals") sufficient to meet Customer's requirements. If the bulk chemicals are provided by Customer, they shall be delivered by Customer by rail or motor carrier to McKesson's loading dock or storage tanks in such quantities, and at such times as McKesson may direct and shall be unloaded by \_\_\_\_\_.

7. Orders. At least \_\_\_\_\_ days prior to the date on which Customer requires delivery of the Products, it shall give to McKesson a firm packaging order for the quantity required. In no event shall McKesson be required to package for delivery to Customer, more than \_\_\_\_\_ [pounds] [gallons] of the Products in any \_\_\_\_\_ period. Each packaging order to Customer shall constitute a separate and independent transaction and McKesson may recover for each such repackaging service without reference to any other.

8. Rates. For the services to be provided by McKesson hereunder, Customer shall pay to McKesson the sum of \$\_\_\_\_ for each (ix\* \_\_\_\_\_) of the Products packaged by McKesson hereunder. Customer shall also pay the freight from McKesson's facilities to Customer's dock, and all taxes applicable to sale of the Products to Customer (other than income, franchise or similar taxes measured by McKesson's income). It is contemplated that all services hereunder are to be provided during McKesson's normal working hours. Any

(ix\* Use appropriate reference-- pound, gallon, container, etc.)

**McKesson**  
**Operations**

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overtime or other additional expense incurred by McKesson for work performed at Customer's request beyond such hours shall be paid by Customer. Any personal property taxes assessed against any repackaged Products while in the hands of McKesson shall be paid by Customer.

9. Payments. Invoices for services hereunder shall be rendered to Customer on or before the \_\_\_\_ day of each month for materials packaged and shipped to Customer during that month. All invoices shall be payable net \_\_\_\_ days.

10. Samples. McKesson shall retain for a period of \_\_\_\_\_ a representative sample of each batch of the Products packaged for Customer. Customer shall have access thereto at reasonable business hours.

11. Shortages. Where the bulk chemicals are supplied by Customer, the quantity thereof shall be determined by measurements made by McKesson and, unless objected to within five days, shall control. Losses or shortages (except any shrinkage which is inherent in the losses which do not exceed \_\_\_\_%) shall be borne by McKesson and shall be reimbursed to Customer at Customer's actual invoice cost therefor.

12. Indemnity. McKesson shall defend, indemnify and hold Customer harmless from all claims alleging personal injury (including death), property damage, economic losses, or other damages or losses (hereinafter "Losses") resulting from McKesson's negligence or intentional misconduct in its

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**McKesson**  
**Operations**

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| Subject                            | Issue Date | Effective Date |     |
| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/30/86    | 6/30/86        |     |

performance of its obligations hereunder. Customer shall indemnify and hold McKesson harmless from all claims alleging Losses resulting from (i) McKesson's possession, handling, resale or use of any of the bulk chemicals, MSD sheets or labels supplied by Customer, or of any of the Products; or (ii) compliance with any specifications established by Customer; or (iii) any negligence or intentional misconduct of Customer in its performance of its obligations hereunder.

13. Insurance. McKesson shall during the term hereof, provide Customer certificates of insurance evidencing coverage for Statutory Workers' Compensation and Comprehensive General Liability coverage, with limits of not less than \$1,000,000 combined single limit for bodily injury and property damage, insuring McKesson's obligations hereunder. Such certificates shall provide that Customer will be given not less than ten days notice of cancellation or material change. Customer shall during the term hereof, provide McKesson certificates of insurance evidencing coverage for Statutory Workers' Compensation and Comprehensive General Liability coverage, with limits of not less than \$1,000,000 combined single limit for bodily injury and property damage, insuring Customer's obligations hereunder. Such certificates shall provide that McKesson will be given not less than ten days notice of cancellation or material change.

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**McKesson**  
**Operations**

| Section                            | Reference  | Page           | End |
|------------------------------------|------------|----------------|-----|
| REPACK                             | 20.71      | 8              |     |
| Subject                            | Issue Date | Effective Date |     |
| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/30/86    | 6/30/86        |     |

14. Limitation of Liability. No liability shall result to either party from delay in performance or non-performance, caused by circumstances beyond the control of the party affected, including, but not limited to, Act of God, fire, flood, strike or other labor trouble, shortages of labor, materials or transportation. Quantities so affected may be eliminated from the packaging order without liability, but the packaging order shall remain otherwise unaffected. In the event of a shortage of bulk chemicals or Containers (other than where same are supplied by Customer), McKesson shall have the right to allocate its available supplies among its customers, including Customer, on such basis as McKesson deems fair and equitable.

15. Claims by Customer. No claim of any kind for damages suffered by Customer arising from shortages in Products packaged by McKesson or for nondelivery of same shall be greater in amount than the price to be paid for the services provided by McKesson hereunder in respect of which such damages are claimed; and failure to give notice of any claim within sixty (60) days from the date of delivery or scheduled delivery shall constitute a waiver by Customer of any claim in respect of such services. McKesson shall not be liable for Customer's indirect or consequential damages arising from such shortages or nondeliveries.

16. Default. If Customer is in default with respect to any of the terms or conditions of this Agreement or if in McKesson's judgment, the financial responsibility of

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**McKesson**  
**Operations**

| Section                            | Reference  | Page           | End |
|------------------------------------|------------|----------------|-----|
| REPACK                             | 20.71      | 9              |     |
| Subject                            | Issue Date | Effective Date |     |
| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/30/86    | 6/30/86        |     |

Customer shall at any time be impaired, McKesson, at its option, may defer further packaging until such default is remedied, or, in addition to any other legal remedy, McKesson may decline further packaging orders.

17. Binding Effect. This Agreement and the schedules and exhibits hereto shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns.

18. Assignment. This Agreement is not assignable in whole or in part by either party without the prior written consent of the other party.

19. Modification. This Agreement supersedes and replaces all prior agreements between the parties relating to the subject matter hereof. This Agreement constitutes the entire understanding between the parties and no modification or waiver thereof shall be of any force or effect unless in writing and signed by the party claimed to be bound thereby. No modification shall be effected by the acknowledgement or acceptance of packaging order forms, invoices, bills of lading, or shipping forms, containing different or additional conditions.

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**McKesson**  
**Operations**

| Section                            | Reference  | Page           | End |
|------------------------------------|------------|----------------|-----|
| REPACK                             | 20.71      | 10             | X   |
| Subject                            | Issue Date | Effective Date |     |
| CUSTOM PACKAGING - SAMPLE CONTRACT | 6/30/86    | 6/30/86        |     |

20. Attorneys' Fees. In the event legal action is necessary by either party to enforce this Agreement or resolve a dispute arising hereunder, the prevailing party shall be entitled to recover reasonable attorneys' fees.

McKESSON CHEMICAL COMPANY

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

\_\_\_\_\_  
[CUSTOMER FIRM NAME]

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

**MKIL40415**

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**McKesson**  
**Operations**

| Section                        | Reference  | Page           | End |
|--------------------------------|------------|----------------|-----|
| REPACK                         | 20.80      | 1              |     |
| Subject                        | Issue Date | Effective Date |     |
| REPACK INSTRUCTION SHEET (RIS) | 9/15/85    | 9/15/85        |     |

**GENERAL**

The need for written instructions to chemical repack personnel becomes more and more apparent. This need arises from a combination of factors, including the variety and complexity of the many chemicals we repack; increasing legislation on the "employees's right to know"; the rapidly changing regulations on chemical exposure limits; and the trend in liability in workers' compensation decisions. We believe that the Chemical Group and all of its employees can benefit from a uniform and consistent procedure to inform and instruct employees of the various steps and safety protection requirements necessary in the repacking process of each different chemical.

Although the Repack Instruction Sheet, or RIS, (see Exhibit 1) is not a guarantee that we will avoid all possible problems in the repack process, the RIS will, if conscientiously and carefully completed, minimize lapses in communication between supervisor and repacker which have caused us difficulties in the past. The RIS is designed to help employee and employer alike.

The RIS is structured to communicate three basic functions of the repack operation:

1. The front section of the sheet covers the specific instructions for repacking a specific product; including number, type and size of container, label(s), markings, and detailed sampling and fill procedures.
2. The safety/health segment on the reverse side of the RIS gives specific instructions concerning protective clothing, respiratory protection, eye protection, first aid and spill control. Because it also informs the employee of the principal hazards of the product to be repacked, this segment might also function as an abbreviated Material Safety Data Sheet.
3. The final portion of the RIS is designed to remind the employee repacker that management wants and needs his comments concerning the task at hand, and/or the condition of mechanical or safety equipment. It also provides for controls on supervisory followup to the repacker's comments.

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**MKIL189417**

**McKesson**  
**Operations**

| Section                        | Reference  | Page           | End |
|--------------------------------|------------|----------------|-----|
| REPACK                         | 20.80      | 2              |     |
| Subject                        | Issue Date | Effective Date |     |
| REPACK INSTRUCTION SHEET (RIS) | 9/15/85    | 9/15/85        |     |

**PREPARATION**

The RIS originates at Home Office with the Request to Repackage. The Technical Director is responsible for assigning the RIS sheet an identifying code number, inserting the correct product name, and completing the Safety/Health portion of RIS. (He may contribute more if certain special information is indicated for that product.) The RIS is returned to Regional Operations from Home Office with the formal written Approval to Repack. (See Exhibit 2 for list of RIS currently issued.)

Should an emergency or one-time approval to repack be given by the region or Home Office, the Regional Operations and Safety Manager, after consultation with the Technical Director, shall complete the RIS form or instruct the branch on proper completion of the RIS form for that specific product. (Copies of such field-originated RIS forms should be sent to the Technical Director.) If a repack function is only a one-time or emergency event, the need for the RIS takes on even greater importance as a means of avoiding miscommunication.

Ample space is allotted for most entries except possibly those spaces reserved for sampling and filling procedures. If a procedure is only referenced for the sake of brevity, the complete procedure must be readily available to the operating employees for review. It is highly important that we not simply assume that the operating employee is wholly familiar with the repack procedure irrespective of his tenure on the job.

Corrections/changes, if needed, should be relayed through Regional Operations to Home Office.

**IMPLEMENTATION**

Each facility that engages in chemical repacking must implement the RIS program. Completed RIS forms have been provided to the regional offices for all the products repacked by their branches. (Some exceptions such as a blend or an oversight may exist, in which cases a request for a Repack Instruction Sheet should be made immediately.)

**MKIL40417**

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**McKesson**  
**Operations**

| Section                        | Reference  | Page           | End |
|--------------------------------|------------|----------------|-----|
| REPACK                         | 20.80      | 3              |     |
| Subject                        | Issue Date | Effective Date |     |
| REPACK INSTRUCTION SHEET (RIS) | 9/15/85    | 9/15/85        |     |

IMPLEMENTA-  
TION  
(Cont.)

After the RIS is received by the Regional Safety and Operations Manager, any items not already filled in are completed. The extent of this completion may vary by region but, generally, it will include the front segment of the form beginning with the portion headed "Labels." (Except for product name, the first two rows are completed by the Service Center at the time a job ticket is prepared. The portion not completed by Home Office or the Region must be completed by the Service Center.)

The completed RIS becomes the "Master Copy" and is retained in the Service Center files until a job ticket is prepared, at which time the master copy is pulled and photocopied, returning the master copy to file. The final information, such as number of containers to be repacked, lot numbers, etc., needed to complete the instruction to the repack operator is obtained from the job ticket and entered on the RIS form.

The completed RIS is to be handed to the operator by the supervisor making certain that any referenced procedural information is attached or readily accessible. (The job ticket does not have to accompany the RIS, but remains with the supervisor for completion.)

The repack operator now has an opportunity to review these instructions, ask questions for clarification, reread his procedures, etc., before beginning the repack function.

Upon completion of the job, the repack operator is required to sign each RIS and comment on any irregularities, as well as the condition of safety and mechanical equipment. Any comment requiring correction or followup, must be promptly addressed by management and noted after corrective action has been completed.

A new RIS is to be submitted each time a job ticket is prepared. (Some repack of bulk dry products and/or compressed gases are excepted. See next page.) Remember, the RIS, in fact, constitutes written instructions to be given immediately prior to a repack function.

**MKIL40418**

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**McKesson**  
**Operations**

| Section                        | Reference  | Page           | End |
|--------------------------------|------------|----------------|-----|
| REPACK                         | 20.80      | 4              | X   |
| Subject                        | Issue Date | Effective Date |     |
| REPACK INSTRUCTION SHEET (RIS) | 9/15/85    | 9/15/85        |     |

**RETENTION**

When completed, the RIS is to be filed and retained with the Service Center copy of the job ticket for one year and then destroyed. Obviously, should an injury or litigation result from any specific repack job, it is important that the relevant RIS be retained until the situation is resolved.

**DRY BULK  
PRODUCTS/  
COMPRESSED  
GASES  
REPACK**

When the repack of bulk dry products or compressed gases is to occur, job tickets are sometimes prepared after the fact, or as convenience may dictate.

In such situations, a RIS should be prepared for each shift, and should remain at the repack station during that shift, so that it is available should there be an operator change during the shift. As an example, a RIS is prepared for filling chlorine cylinders. A job ticket may or may not be prepared, but a completed RIS is handed the beginning filling operator at the start of the shift. It is normal during the shift for one of the other chlorine workers to switch jobs with the filling operator to avoid boredom, thus the need to have the RIS available at the fill station. Both operators receive proper instruction, and both should complete and sign the comment section before it is returned at the end of their shift.

**MKIL40419**

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MKIL189420

# Repack Instruction Sheet

McKesson Chemical Company  
Foremost-McKesson  
Chemical Group



|                             |           |         |
|-----------------------------|-----------|---------|
| Date                        | Product   | Lot No. |
| No. containers to be filled | Container |         |

Labels: Place labels in a neat manner as instructed.

|                            |          |
|----------------------------|----------|
| McKesson                   | Supplier |
| Special label instructions |          |
| DOT                        | Other    |

## Stencil/Stamp

Calculate and stencil gross and tare weight

|                    |                    |                          |                              |        |
|--------------------|--------------------|--------------------------|------------------------------|--------|
| Net Weight         | Lbs.               | Kilos                    | Gallons                      | Liters |
| Product Name (DOT) |                    |                          |                              |        |
| Deposit<br>\$      | None Required<br>= | Special Exemption Number | Hazard Identification Number |        |
| Other              |                    |                          |                              |        |

|  |          |           |                  |
|--|----------|-----------|------------------|
| Bung Seals<br>Yes <input type="checkbox"/> No <input type="checkbox"/>         | Type     | Bung Type | Bung Gasket Type |
| Sampling   |          |           |                  |
| Grounding Required<br>Yes <input type="checkbox"/> No <input type="checkbox"/> | Flushing |           |                  |
| Part/Drum Package  |          |           |                  |
| Fill Procedure   |          |           |                  |

O-400 (IN 5-80)

**Be alert. Work safely.**

Safety and Health Information  
on reverse side of this form.

**MKIL40420**

MK094830

MKIL189421

**Safety/Health**

|                               |            |         |
|-------------------------------|------------|---------|
| Ventilation: Local Exhaust    | Mechanical | Special |
| Respiratory Protection (Type) |            |         |
| Eye Protection                |            |         |
| Protective Clothing           |            |         |
| Other Protective Equipment    |            |         |
| First Aid Procedure           |            |         |
| Principal Hazards             |            |         |
| Special Information           |            |         |
| Spill Control                 |            |         |

**To Be Completed by Repacker**

|   |         |
|---|---------|
| Safety Equipment Satisfactory                                   | Explain |
| Yes <input type="checkbox"/> No <input type="checkbox"/> If Not |         |
| Exhaust Equipment Satisfactory                                  | Explain |
| Yes <input type="checkbox"/> No <input type="checkbox"/> If Not |         |
| Mechanical Equipment Satisfactory                               | Explain |
| Yes <input type="checkbox"/> No <input type="checkbox"/> If Not |         |
| Comments:   |         |
|   |         |
|   |         |
|   |         |
| (Signed)  | Date    |
| (Repacker)  |         |
| Above comments noted and action taken as follows:               |         |
|   |         |
|   |         |
|   |         |
|   |         |
| (Signed)  | Date    |
| (Supervisor)  |         |

**MKIL40421**

MK094831

MKIL189422

REPACK INSTRUCTION SHEET LIST

Product Type: ACIDS

| <u>NUMBER</u> | <u>PRODUCT</u>              | <u>NUMBER</u> | <u>PRODUCT</u>              |
|---------------|-----------------------------|---------------|-----------------------------|
| A-01-a        | Acetic Acid Glacial         | A-16-a        | Dodecyl Benzene Sulfonic    |
| -b            | Acetic Acid Solution        | -b            | Alkyl Benzene Sulfonic Acid |
| -02-a         | Hydrochloric                | -c            | Calsoft LAS 99              |
| -b            | Muriatic                    | -17-a         | Propionic Acid              |
| -03-a         | Nitric                      |               |                             |
| -b            | Nitric, 40% or less         |               |                             |
| -04-a         | Phosphoric 85%              |               |                             |
| -b            | Phosphoric Solution         |               |                             |
| -05-a         | Polyphosphoric              |               |                             |
| -06-a         | Sulfuric                    |               |                             |
| -07-a         | Hydrofluoric                |               |                             |
| -08-a         | Hydrofluosilicic 23-25%     |               |                             |
| -09-a         | Hydroxyacetic Technical 70% |               |                             |
| -10-a         | Formic 85%                  |               |                             |
| -b            | Formic Acid 90%             |               |                             |
| -11-a         | Boric Acid                  |               |                             |
| -12-a         | Cresylic Acid               |               |                             |
| -13-a         | 2-Ethylhexoic Acid          |               |                             |
| -14-a         | Oleic Acid                  |               |                             |
| -15-a         | Sulfamic                    |               |                             |

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REPACK INSTRUCTION SHEET LIST

Product Type: ALCOHOLS

| <u>NUMBER</u> | <u>PRODUCT</u>              | <u>NUMBER</u> | <u>PRODUCT</u>                |
|---------------|-----------------------------|---------------|-------------------------------|
| L-01-a        | Benzyl Alcohol N.F.         | L-15-a        | Alfol *14                     |
| -b            | Benzyl Alcohol              | -16-a         | Alfol *1216                   |
| -02-a         | n-Butyl Alcohol             | -17-a         | Ethanol, CD-19                |
| -03-a         | Isobutyl Alcohol            | -b            | Anhydrol *190                 |
| -04-a         | sec-Butyl Alcohol           | -c            | Anhydrol *200                 |
| -05-a         | Cyclohexanol                | -d            | Anhydrol *Solvent<br>Special  |
| -06-a         | Isodecanol                  | -e            | Synasol *190                  |
| -b            | Decyl Alcohol               | -f            | Synasol *200                  |
| -07-a         | Diactone Alcohol            | -g            | Synasol *Solvent<br>Anhydrous |
| -08-a         | 2-Ethylhexanol              | -h            | Synasol *Solvent<br>(FM-3224) |
| -09-a         | Methanol                    | -i            | Neosol *190                   |
| -10-a         | Methyl Amyl Alcohol         | -18-a         | Propasol *Solvent P           |
| -b            | Methyl Isobutyl Carbinol    | -19-a         | P-Amyl Alcohol                |
| -11-a         | n-Propyl Alcohol            | -20-a         | Alfol *20                     |
| -12-a         | Isopropyl Alcohol Anhydrous | -21-a         | Yarmor*302/Pine Oil           |
| -b            | Isopropanol 91%             | -22-a         | Alfol *1618                   |
| -c            | Isopropanol 99%             | -23-a         | Alfol *18                     |
| -d            | Isopropanol 70% USP         | -24-a         | Nonyl Phenol                  |
| -e            | Isopropanol 91% Refined     |               |                               |
| -13-a         | Alfol *8                    |               |                               |
| -14-a         | Alfol *12                   |               |                               |

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MKIL189424

REPACK INSTRUCTION SHEET LIST

Product Type: AMINES

| <u>NUMBER</u> | <u>PRODUCT</u>          | <u>NUMBER</u> | <u>PRODUCT</u>         |
|---------------|-------------------------|---------------|------------------------|
| M-01-a        | Aminoethylethanolamine  | M-19-a        | N,N-Dimethylaniline    |
| -02-a         | Aniline                 | -20-a         | Tetraethylenepentamine |
| -03-a         | Diethanolamine          | -21-a         | Urea Solution          |
| -04-a         | Diisopropanolamine      |               |                        |
| -05-a         | Dimethylformamide       |               |                        |
| -06-a         | Monoethanolamine        |               |                        |
| -b            | Monoethanolamine 35%    |               |                        |
| -07-a         | Monoisopropanolamine    |               |                        |
| -08-a         | Morpholine              |               |                        |
| -09-a         | Triethanolamine         |               |                        |
| -10-a         | Mixed Isopropanolamines |               |                        |
| -11-a         | Triisopropanolamine     |               |                        |
| -b            | Amine 12                |               |                        |
| -12-a         | Diethylenetriamine      |               |                        |
| -13-a         | Ethylenediamine         |               |                        |
| -14-a         | N-Methyl Diethanolamine |               |                        |
| -15-a         | Diethylamine            |               |                        |
| -16-a         | Triethylamine           |               |                        |
| -17-a         | Cyclohexylamine         |               |                        |
| -18-a         | N-Methylpyrrolidone     |               |                        |

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MKIL189425

Chem Op 20.80 -  
Exhibit 2  
9/15/85  
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REPACK INSTRUCTION SHEET LIST

Product Type: ALDEHYDES/KETONES

| <u>NUMBER</u> | <u>PRODUCT</u>                  |
|---------------|---------------------------------|
| K-01-a        | Acetone                         |
| -02-a         | Cyclohexanone                   |
| -03-a         | Diisobutyl Ketone               |
| -04-a         | Formaldehyde (37%)              |
| -b            | Formaldehyde (27%)              |
| -05-a         | Isophorone                      |
| -06-a         | Methyl Ethyl Ketone             |
| -b            | Methyl Ethyl Ketone, refined    |
| -07-a         | Methyl Isobutyl Ketone          |
| -b            | Methyl Isobutyl Ketone, refined |

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MKIL189426

REPACK INSTRUCTION SHEET LIST

Product Type: BASES

| <u>NUMBER</u> | <u>PRODUCT</u>            |
|---------------|---------------------------|
| B-01-a        | Ammonia, anhydrous        |
| -b            | Aqua Ammonia, 26° BL      |
| -c            | Aqua Ammonia, 25%         |
| -02-a         | Caustic Potash Liquid 45% |
| -03-a         | Caustic Soda Beads        |
| -b            | Caustic Soda Liquid 50%   |
| -c            | Caustic Soda Liquid 10%   |
| -d            | Caustic Soda Liquid 25%   |
| -e            | Caustic Soda Liquid 20%   |
| -f            | Caustic Soda Liquid 30%   |

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REPACK INSTRUCTION SHEET LIST

Product Type: BLENDS

| <u>NUMBER</u> | <u>PRODUCT</u>                | <u>NUMBER</u> | <u>PRODUCT</u>           |
|---------------|-------------------------------|---------------|--------------------------|
| X-01-a        | Electronic Stripper           | X-06-a        | Linsco Blend #3          |
| -b            | Xerox Stripper X              | -b            | Sanbar Blend             |
| -c            | IBM Solvent                   | -07-a         | McKesson Flux Remover    |
| -d            | PR Stripper Blend             | -b            | Kester Solder            |
| -e            | Special Blend #45             | -c            | Perk-Butanol Blend       |
| -f            | Technic Blend                 | -d            | Sanbar Solvent #60       |
| -g            | Photo Circuits Stripper Blend | -08-a         | Reducer 69               |
| -h            | McKSolv 8529                  | -b            | Aromatic/Ketone Blend    |
| -02-a         | Mobil Chemical Blend          | -c            | Crown Cork 1373 Blend    |
| -03-a         | Linsco Blend #2               | -e            | Plate Wash               |
| -04-a         | General Cable Safety Solvent  | -f            | Xylene/Diacetone Alcohol |
| -b            | 111-Methylene Chloride Blend  | -g            | Alumax #2                |
| -c            | McKSolv 1315                  | -h            | Fabronic Blend           |
| -d            | Allied Tube Safety Solvent    | -i            | Vinyl Blend              |
| -e            | Swiss Blend #1                | -j            | Press Lacquer Thinner    |
| -f            | McKSolv 17                    | -k            | T-Blend                  |
| -g            | McKSolv 32                    | -l            | MEK - Toluol 50/50       |
| -05-a         | C&S Chemical-69 Thinner Blend | -m            | Paraffin Solvent         |
| -b            | S&W 120 Thinner               | -n            | Magnetic Products Blend  |
| -c            | McKSolv 14                    | -o            | Paraffin Solvent #2      |
|               |                               | -p            | Airstream Blend          |

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REPACK INSTRUCTION SHEET LIST

Product Type: BLENDS (Cont.)

| <u>NUMBER</u> | <u>PRODUCT</u>             | <u>NUMBER</u> | <u>PRODUCT</u>           |
|---------------|----------------------------|---------------|--------------------------|
| X-08-q        | McKSolv 2                  | X-14-a        | Owens Corning Blend      |
| -r            | McKSolv 15                 | -b            | Cold Cleaner 120         |
| -s            | McKSolv 24                 | -c            | McKSolv 7                |
| -t            | McKSolv 29                 | -15-a         | CODO Blend               |
| -u            | Aerochem Blend             | -b            | Phenolic Blend           |
| -09-a         | Xylene/n-Propanol Blend    | -16-a         | Alcohol Blend            |
| -b            | McKSolv 4                  | -b            | Slow Blend               |
| -c            | McKSolv 49                 | -c            | McKSOLV <sup>R</sup> 218 |
| -10-a         |                            | -d            | 4-TCB/Methanol Blend     |
| -11-a         |                            | -e            | McKSolv 805              |
| -12-a         | Concentrate Stripper Blend | -f            | McKSolv 820              |
| -b            | McKSolv 1050               | -g            | Methanol/Acetate Blend   |
| -c            | McKSolv 10                 | -h            | Blend E                  |
| -13-a         | Fracmaster #1 Blend        | -i            | McKSolv 21               |
| -b            | Aircraft Engine Additive   | -j            | McKSolv 43               |
| -c            | D. Alkins Blend            | -k            | McKSolv 41               |
| -d            | Methanol/Water Blend       | -l            | McKSolv 45               |
| -e            | Viratek Blend              | -17-a         | Acetate Blend            |
| -f            | Toyota Blend #1            | -b            | Olin 80/20               |
| -g            | Conrail Blend              | -c            | McKSolv 22               |
| -h            | Aircraft Engine Supplement |               |                          |

MKIL40428

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MKIL189429

REPACK INSTRUCTION SHEET LIST

Product Type: BLENDS (Cont.)

| <u>NUMBER</u> | <u>PRODUCT</u>                 | <u>NUMBER</u> | <u>PRODUCT</u>                     |
|---------------|--------------------------------|---------------|------------------------------------|
| X-18-a        | Chacon #17                     | X-23-a        | Blend MCN-106                      |
| -b            | Blend MCN-101                  | -b            | Fram Blend #2                      |
| -c            | XL Blend                       | -c            | Abco Developer Blend               |
| -d            | Chacon #27                     | -d            | McKSolv 1                          |
| -e            | N & M Solvent                  | -e            | McKSolv 8                          |
| -f            | Rexart Blend #938              | -24-a         | CSMS Blend                         |
| -g            | Sparks M.S. Solvent            | -b            | EMC 13 Special Blend               |
| -h            | Leisure Time Blend             | -c            | Rexart XK-200                      |
| -i            | McKSolv 815                    | -d            | Penetone M.S. Blend                |
| -j            | Styrene/Polystyrene<br>Mixture | -e            | Rexart 1000 Wash                   |
| -k            | McKSolv 39                     | -f            | Rexart XK-141                      |
| -19-a         | Blend MCN-103                  | -g            | EMC 98 Blend                       |
| -20-a         | Epoxy Thinner                  | -h            | Solvent Blend NTB                  |
| -b            | Coatings Blend A               | -i            | Blend MN-TTP                       |
| -c            | M-T-M                          | -j            | Blend A                            |
| -d            | Union * R-306                  | -k            | MN-MT Blend                        |
| -21-a         | Del Mar #4 Blend               | -l            | AMP Blend SS                       |
| -22-a         | Sherer Paint Stripper          | -m            | Safety Solvent #4                  |
|               |                                | -n            | General Dynamics Safety<br>Solvent |

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MKIL189430

REPACK INSTRUCTION SHEET LIST

Product Type: BLENDS (Cont.)

| <u>NUMBER</u> | <u>PRODUCT</u>                  | <u>NUMBER</u> | <u>PRODUCT</u>       |
|---------------|---------------------------------|---------------|----------------------|
| X-24-o        | McKSolv 18                      | X-33-a        | Dubois HI Alk        |
| -p            | Sanbar #61                      | -b            | Hi-Alk Blend         |
| -q            | Grumman #1                      | -c            | TC Bottle Wash       |
| -r            | Floken #3                       | -d            | Mixed Descaling Salt |
| -s            | McKSolv 36                      | -34-a         | Sparks SG-34 Blend   |
| -25-a         | FMC Blend #2                    | -35-a         | Belden Blend #1      |
| -26-a         | Clorox Solvent/Surfactant Blend | -36-a         | Kardex Dry Mixture   |
| -27-a         | Lacquer Thinner 28-X            |               |                      |
| -b            | E-Z Prep Liquid Sandpaper #4    |               |                      |
| -c            | Electrostatic Cleaner K059      |               |                      |
| -d            | Whittaker B3C47 Blend           |               |                      |
| -28-a         | Ford Stripper Blend M5B 244A    |               |                      |
| -29-a         | Blend 291                       |               |                      |
| -30-a         | Cleaner MCJS                    |               |                      |
| -31-a         | Sohio Silicone Blend            |               |                      |
| -b            | Defoamer 71                     |               |                      |
| -c            | McKSolv 28                      |               |                      |
| -32-a         | Stearic Acid Flux               |               |                      |

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MKIL189431

REPACK INSTRUCTION SHEET LIST

Product Type: CHLORINATED HYDROCARBONS

| <u>NUMBER</u> | <u>PRODUCT</u>                | <u>NUMBER</u> | <u>PRODUCT</u>            |
|---------------|-------------------------------|---------------|---------------------------|
| C-01-a        | Carbon Tetrachloride          | C-06-d        | Triclene * D              |
| -02-a         | Ethylene DiChloride           | -e            | Trichloroethylene MDG     |
| -03-a         | Methylene Chloride            | -f            | Trichloroethylene Refined |
| -b            | Aerotherne * MM               | -07-a         | Dowclene * EC             |
| -c            | Methylene Chloride Refined    | -b            | EC BLEND                  |
| -04-a         | Perchloroethylene             | -08-a         | Ortho-Dichlorobenzene     |
| -b            | Perchloroethylene SVG         | -09-a         | Trichlorobenzene          |
| -c            | Dowper * Golden CS Solvent    | -10-a         | Halso 99                  |
| -d            | Dowper CS Solvent             | -11-a         | Freon * TF Solvent        |
| -e            | Perchloroethylene Refined     | -b            | McKSolv * TF              |
| -05-a         | 1,1,1-Trichloroethane         | -12-a         | Freon * TA Solvent        |
| -b            | Aerotherne * TT               | -13-a         | Freon * TE Solvent        |
| -c            | Chlorothene * Ind.            | -14-a         | Freon * TES Solvent       |
| -d            | Chlorothene * NU              | -15-a         | Freon * TMC Solvent       |
| -e            | Chlorothene * VG              | -b            | McKSolv * TMC             |
| -f            | Chlorothene * SM Solvent      | -16-a         | Freon * TMS Solvent       |
| -g            | Solvent 1,1,1                 | -17-a         | Propylene Dichloride      |
| -h            | 1,1,1-Trichloroethane Refined | -18-a         | Freon * T-E 35            |
| -06-a         | Trichloroethylene             | -19-a         | Freon * T-P 35            |
| -b            | Hi-Tri *                      | -b            | McKSolv TP 50             |
| -c            | Neu-Tri                       | -c            | Freon * T-P 10            |
|               |                               | -20-a         | Chloroform                |

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REPACK INSTRUCTION SHEET LIST

ESTERS/ANHYDRIDES/PHTHALATES

| <u>NUMBER</u> | <u>PRODUCT</u>                            | <u>NUMBER</u> | <u>PRODUCT</u>                        |
|---------------|---|---------------|---------------------------------------|
| N-01-a        | Acetic Anhydride                          | N-16-a        | n-Propyl Acetate                      |
| -b            | Acetic Anhydride Mixture                  | -17-a         | Tetrahydrofuran                       |
| -02-a         | Primary Amyl Acetate                      | -18-a         | Span * 20                             |
| -03-a         | n-Butyl Acetate                           | -19-a         | Organosilicone Fluid<br>L-45          |
| -04-a         | Butyl Benzoate                            | -20-a         | K-Flex DP                             |
| -05-a         | Dibutyl Phthalate                         | -21-a         | Glycol Ether PMA                      |
| -b            | Flexol Plasticizer<br>DBP                 | -b            | Dowanol PMA                           |
| -06-a         | Diisodecyl Phthalate                      | -22-a         | Plasticizer DBS<br>(Dibutyl Sebacate) |
| -07-a         | Dioctyl Phthalate                         |               |                                       |
| -b            | Flexol Plasticizer<br>DOP                 |               |                                       |
| -08-a         | Ethyl Acetate 99%                         |               |                                       |
| -b            | Ethyl Acetate                             |               |                                       |
| -09-a         | Isobutyl Acetate                          |               |                                       |
| -10-a         | Isopropyl Acetate                         |               |                                       |
| -11-a         | Butyl Cellosolve <sup>R</sup><br>Acetate  |               |                                       |
| -12-a         | Carbitol <sup>R</sup> Acetate             |               |                                       |
| -13-a         | Cellosolve <sup>R</sup> Acetate           |               |                                       |
| -14-a         | Methyl Cellosolve <sup>R</sup><br>Acetate |               |                                       |
| -15-a         | Butyl Carbitol <sup>R</sup> Acetate       |               |                                       |

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REPACK INSTRUCTION SHEET LIST

Product Type: GLYCOL

| <u>NUMBER</u> | <u>PRODUCT</u>                               | <u>NUMBER</u> | <u>PRODUCT</u>       |
|---------------|--|---------------|----------------------|
| G-01-a        | Ambitrol *CN                                 | -09-a         | Glycerin USP         |
| -b            | Ambitrol * FL                                | -b            | Glycerin, Technical  |
| -02-a         | Diethylene Glycol                            | G-10-a        | Carbowax * 200       |
| -03-a         | Dipropylene Glycol                           | -b            | Polyglycol E-200     |
| -04-a         | Ethylene Glycol                              | -11-a         | Carbowax * 300       |
| -b            | Dowtherm * SR-1                              | -b            | Poly-G *300          |
| -c            | UCAR * Aircraft Deicing<br>Fluid II, PM 5178 | -12-a         | Carbowax * 400       |
| -d            | UCAR * Thermafluid 17                        | -b            | Poly-G * 400         |
| -e            | Permanent Antifreeze                         | -c            | Polyglycol E-400     |
| -f            | UCAR Aircraft Deicing Fluid<br>II, PM 5234   | -13-a         | Carbowax * 600       |
| -g            | Dow Aircraft Deicing Fluid<br>146 AR         | -14-a         | Carbowax * 1000      |
| -h            | Hydraulic System Fluid, WGF<br>200D          | -15-a         | Carbowax * 1500      |
| -05-a         | Hexylene Glycol                              | -16-a         | Pluronic * L-31      |
| -06-a         | Propylene Glycol, Techn.                     | -b            | Pluronic * L-61      |
| -b            | Dowfrost * Ind.                              | -c            | Pluronic * L-62      |
| -c            | Propylene Glycol USP/FCC                     | -d            | Pluronic * L-64      |
| -d            | UCAR * Foodfreeze 35                         | -e            | Pluronic * L-101     |
| -07-a         | Triethylene Glycol                           | -17-a         | Ployglycol 15-200    |
| -b            | Getty Blend                                  | -18-a         | Polypropylene Glycol |
| -08-a         | Tripropylene Glycol                          | -19-a         | Sorbitol 70% USP     |
|               |  | -b            | Polyol P             |
|               |  | -20-a         | 1,3 Butylene Glycol  |

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REPACK INSTRUCTION SHEET LIST

Product Type: GLYCOL ETHERS

| <u>NUMBER</u> | <u>PRODUCT</u>                                | <u>NUMBER</u> | <u>PRODUCT</u>   |
|---------------|---|---------------|--|
| GE-01-a       | Dowanol * DB Diethylene Glycol Butyl Ether    | GE-06-a       | Dowanol * EE Ethylene Glycol Ethyl Ether                           |
| -b            | Butyl Carbitol *                              | -b            | Cellosolve * Solvent   |
| -c            | Glycol Ether DB                               | -c            | Poly-Solv * EE   |
| -02-a         | Dowanol * DE Diethylene Glycol Ethyl Ether    | -d            | Glycol Ether EE  |
| -b            | Carbitol * Solvent                            | -07-a         | Dowanol * EM Ethylene Glycol Methyl Ether                          |
| -c            | Glycol Ether DE                               | -b            | Methyl Cellosolve  |
| -03-a         | Dowanol * DM Diethylene Glycol Methyl Ether   | -c            | Poly-Solv * EM   |
| -b            | Methyl Carbitol                               | -d            | Glycol Ether EM  |
| -c            | Poly-Solv * DM                                | -08-a         | Dowanol * EPH Ethylene Glycol Phenyl Ether                         |
| -d            | Glycol Ether DM                               | -b            | Glycol Ether EPH   |
| -04-a         | Dowanol * DPM Dipropylene Glycol Methyl Ether | -09-a         | Dowanol * PIBT Propylene Glycol Iso-butyl Ether<br>Higher Homologs |
| -b            | Poly-Solv * DPM                               | -10-a         | Dowanol * PM Propylene Glycol Methyl Ether                         |
| -c            | Dowanol DPM SG                                | -b            | Dowtherm*209 Full<br>Fill/Coolant                                  |
| -d            | Glycol Ether DPM                              | -11-a         | Dowanol * TPM Tripropylene Glycol Methyl Ether                     |
| -05-a         | Dowanol * EB Ethylene Glycol Butyl Ether      | -b            | Glycol Ether TPM   |
| -b            | Butyl Cellosolve                              | -12-a         | Dalpad * A Aromatic Glycol Ether                                   |
| -c            | Poly-Solv * EB                                | -13-a         | Propasol * Solvent B   |
| -d            | Butyl Oxitol *                                |               |  |
| -e            | Glycol Ether EB                               |               |  |

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REPACK INSTRUCTION SHEET LIST

Product Type: GLYCOL ETHERS

| <u>NUMBER</u> | <u>PRODUCT</u>                           |
|---------------|--|
| GE-13-b       | Propasol * Solvent P                     |
| -c            | Propasol * Solvent DM                    |
| -14-a         | Dowfroth * 1012 - D<br>Flotation Frother |
| -15-a         | Dowanol PPH                              |
| -16-a         | Ethoxytriglycol                          |
| -17-a         | Glycol Ether DE-SG                       |

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REPACK INSTRUCTION SHEET LIST

Product Type: HYDROCARBONS

| <u>NUMBER</u> | <u>PRODUCT</u>       | <u>NUMBER</u> | <u>PRODUCT</u>            |
|---------------|----------------------|---------------|---------------------------|
| H-01-a        | Diisobutylene        | H-09-g        | Shell Sol 71              |
| -02-a         | Heptane              | -h            | Shell Sol 320             |
| -03-a         | Hexane               | -10-a         | Turpentine                |
| -b            | Shell Sol B          | -b            | Kerosene                  |
| -04-a         | Styrene Monomer      | -11-a         | Mineral Spirits           |
| -05-a         | Toluene              | -b            | Espesol 300S              |
| -06-a         | Xylene               | -12-a         | Lactol Spirits            |
| -07-a         | Naptha VM&P          | -b            | Tolu-Sol 6                |
| -b            | Naptha 200-235       | -c            | Tolu-Sol 19EC             |
| -08-a         | Cyclosol *53 (Shell) | -13-a         | Mineral Oil               |
| -b            | Panasol AN-3         | -b            | McKessol 8530             |
| -c            | Aromatic 150         | -c            | Sontex 85                 |
| -d            | McKSolv PX-2         | -d            | Sontex 350                |
| -e            | Aromatic 100         | -e            | White Mineral Oil 70 USP  |
| -f            | Cyclosol 63          | -f            | White Mineral Oil 90 USP  |
| -g            | Magnus 3510          | -g            | White Mineral Oil 200 USP |
| -09-a         | Shell Sol 140        | -h            | White Mineral Oil 350 USP |
| -b            | Shell Sol 72         | -15-a         | Polyvis * 10 SH           |
| -c            | Shell Sol 340        | -b            | Polyvis * 30              |
| -d            | Shell 460 Solvent    | -c            | Polyvis * OSH             |
| -e            | LPA Solvent          | -16-a         | Cosdenol 104              |
| -f            | McKSolv 140F         | -17-a         | Union * R-211             |

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REPACK INSTRUCTION SHEET LIST

Product Type: HYDROCARBONS

| <u>NUMBER</u> | <u>PRODUCT</u> |
|---------------|----------------|
| H-18-a        | Poly EM-40     |
| -b            | Poly EM-20     |
| -19-a         | Therminol * 66 |
| -b            | Therminol 55   |
| -20-a         | Alphasize 20   |
| -21-a         | McKSolv PX-1   |
| -22-a         | Tamol 850      |

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REPACK INSTRUCTION SHEET LIST

Product Type: INORGANIC SALTS

| <u>NUMBER</u> | <u>PRODUCT</u>                       | <u>NUMBER</u> | <u>PRODUCT</u>            |
|---------------|--------------------------------------|---------------|---------------------------|
| I-01-a        | Aluminum Sulfate                     | I-16-a        | Ammonium Nitrate Sol. 50% |
| -02-a         | Ammonium Thiosulfate                 | -17-a         | Sodium Nitrate            |
| -03-a         | Diethyl Sulfate                      | -18-a         | Sodium Tripolyphosphate   |
| -04-a         | Ferric Chloride                      | -19-a         | Monoaluminum Phosphate    |
| -05-a         | Magnesium Chloride                   |               |                           |
| -06-a         | Titanium Tetrachloride               |               |                           |
| -07-a         | Sodium Nitrite Sol.                  |               |                           |
| -08-a         | Sodium Silicate Sol.                 |               |                           |
| -b            | Sodium Metasilicate                  |               |                           |
| -c            | Sodium Silicate F                    |               |                           |
| -09-a         | Sodium Hypochlorite Solution         |               |                           |
| -b            | Liquid Bleach                        |               |                           |
| -10-a         | Calcium Chloride Sol.                |               |                           |
| -11-a         | Sodium Hexametaphosphate<br>Sol. 30% |               |                           |
| -b            | Sodium Hexametaphosphate<br>Sol. 45% |               |                           |
| -12-a         | Soda Ash                             |               |                           |
| -13-a         | Sodium Sulfate                       |               |                           |
| -14-a         | Boric Acid                           |               |                           |
| -15-a         | Borax 5 Mol                          |               |                           |

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REPACK INSTRUCTION SHEET LIST

Product Type: MEC MIXTURES

| <u>NUMBER</u> | <u>PRODUCT</u>                           | <u>NUMBER</u> | <u>PRODUCT</u>                            |
|---------------|--|---------------|---|
| Z-01-a        | AP-62                                    | Z-09-d        | Atlas Medium Slow Lacquer Thinner A5789   |
| -b            | McKSolv Fiberclean                       | -e            | Atlas Slow Lacquer Thinner                |
| -02-a         | AP-73                                    | -f            | Atlas Mask Wash Thinner 9A5005            |
| -b            | AP-73R                                   | -g            | Atlas Stripping Thinner 9A5001            |
| -03-a         | AP-82                                    | -h            | Atlas Lacquer Thinner 9A5011              |
| -b            | AP-82S                                   | -i            | Atlas Medium Lacquer Thinner 9A5014       |
| -c            | McKSolv Flushsolv #6                     | -10-a         | Atlas Fast Dry Enamel Reducer 9A5761      |
| -d            | McKSolv EPS                              | -b            | Atlas Medium Enamel Reducer 9A5745        |
| -04-a         | AP-500RS                                 | -11-a         | Atlas Wax & Grease Remover 9A5835         |
| -b            | McKSolv Colsol                           | -12-a         | Atlas Synthetic Enamel Reducer 9A5714     |
| -c            | McKSolv Fluxsolv                         | -13-a         | Atlas Retarder 9A5008                     |
| -05-a         | Stock Thinner                            | -14-a         | Atlas Lacquer Thinner Slow Reducer 9A5729 |
| -06-a         | AP-170                                   | -15-a         | McKSolv TX                                |
| -b            | AP-205B                                  |               |   |
| -07-a         | Cycle Solv 60                            |               |   |
| -b            | Cycle Solv 99                            |               |   |
| -08-a         | McKSolv CBS                              |               |   |
| -09-a         | Atlas Fast Dry Lacquer Thinner 9A5700    |               |   |
| -b            | Atlas Medium Fast Lacquer Thinner 9A5777 |               |   |
| -c            | Atlas Medium Lacquer Thinner 9A5803      |               |   |

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REPACK INSTRUCTION SHEET LIST

| <u>NUMBER</u> | <u>PRODUCT</u>                 |
|---------------|--------------------------------|
| E-01-a        | Versene * 80                   |
| -b            | Versene * 100                  |
| -c            | Sequestrene 30A                |
| -d            | Vertan * 650                   |
| -02-a         | Versenex * 80                  |
| -03-a         | Versenol * 120                 |
| -b            | Sequestrene Chel DM-41         |
| -04-a         | Sodium Xylene Sulfonate 40%    |
| -05-a         | Tricresyl Phosphate            |
| -b            | Triaryl Phosphate              |
| -06-a         | Tributoxyethyl Phosphate       |
| -07-a         | UC* Silicone Emulsion LE-458   |
| -08-a         | SAG-10                         |
| -09-a         | Aero 801 Promoter              |
| -10-a         | Sequestrene NH <sub>4</sub> Fe |
| -11-a         | Tamol 731 25%                  |

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REPACK INSTRUCTION SHEET LIST

Product Type: PEROXIDES

| <u>NUMBER</u> | <u>PRODUCT</u>                        |
|---------------|---------------------------------------|
| P-01-a        | Cumene Hydroperoxide                  |
| P-02-a        | Hydrogen Peroxide                     |
| -b            | Albone                                |
| -c            | Hydrogen Peroxide 31 Reagent<br>Grade |

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REPACK INSTRUCTION SHEET LIST

Product Type: SURFACTANTS, ANIONIC

| <u>NUMBER</u> | <u>PRODUCT</u>        |
|---------------|-----------------------|
| SA-01-a       | Dowfax *2A1           |
| -02-a         | Dowfax *3B2           |
| -03-a         | Neodol *25-3A         |
| -04-a         | Neodol *25-3S         |
| -05-a         | Triton *H-66          |
| -06-a         | Sodium Lauryl Sulfate |
| -07-a         | Triton GR-5M          |
| -08-a         | Triton X-200          |
| -09-a         | Niaproof 08           |

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REPACK INSTRUCTION SHEET LIST

Product Type: SURFACTANTS, NONIONIC

| <u>NUMBER</u> | <u>PRODUCT</u>              | <u>NUMBER</u> | <u>PRODUCT</u>         |
|---------------|-----------------------------|---------------|------------------------|
| SN-01-a       | Neodol * N-23               | SN-06-a       | Tergitol * 15-S-3 (UC) |
| -b            | Neodol * N-25               | -b            | Tergitol * 15-S-5      |
| -c            | Neodol * 91                 | -06-c         | Tergitol * 15-S-7      |
| -c            | Neodol * 25                 | -d            | Tergitol * 15-S-9      |
| -02-a         | Neodol * 25-3               | -e            | Tergitol * 15-S-12     |
| -b            | Neodol * 25-7               | -07-a         | Tergitol * 25-L-7      |
| -c            | Neodol * 25-9               | -b            | Tergitol * 25-L-9      |
| -d            | Neodol * 25-12              | -08-a         | Tergitol * NP-4        |
| -03-a         | Neodol * 91-2.5             | -b            | Tergitol * NP-9        |
| -b            | Neodol * 91-6               | -c            | Tergitol * NP-10       |
| -c            | Neodol * 91-8               | -d            | Tergitol * NP-14       |
| -04-a         | Poly-Tergent * B-150 (Olin) | -e            | Tergitol * NP-27       |
| -b            | Poly-Tergent * B-300        | -f            | Tergitol * NP-35       |
| -c            | Poly-Tergent * B-305        | -g            | Tergitol * NP-X        |
| -d            | Poly-Tergent * B-350        | -h            | Tergitol * NP-6        |
| -e            | Poly-Tergent * J-200        | -09-a         | Tergitol * TMN-6       |
| -05-a         | Poly-Tergent * S-405 LF     | -b            | Tergitol * Min-Foam 2X |
| -b            | Poly-Tergent * SL-42        | -10-a         | Triton * N-57 (R&H)    |
| -c            | Poly-Tergent * SL-62        | -b            | Triton * N-60          |
| -d            | Poly-Tergent * SL-92        | -c            | Triton * N-101         |

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MKIL189444

REPACK INSTRUCTION SHEET LIST

Product Type: SURFACTANTS, NONIONIC Cont.)

| <u>NUMBER</u> | <u>PRODUCT</u>    |
|---------------|-------------------|
| SN-10-d       | McKwet 95N        |
| -e            | Alpha 4040        |
| -11-a         | Triton * X-35     |
| -b            | Triton * X-45     |
| -c            | Triton * X-100    |
| -d            | Triton * X-102    |
| -e            | Triton * X-114    |
| -f            | Triton * X-202    |
| -g            | Triton * X-207    |
| -h            | Triton * X-405    |
| -i            | Triton * X-705    |
| -j            | LMSO              |
| -k            | Triton X-305      |
| -l            | Triton X-165      |
| -12-a         | Alfonic * 1412-40 |
| -13-a         | Plurafac * RA-20  |
| -14-a         | Triton DF-12      |

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**McKesson**  
**Operations**

| Section                       | Reference  | Page           | End |
|-------------------------------|------------|----------------|-----|
| REPACK                        | 20.81      | 1              | X   |
| Subject                       | Issue Date | Effective Date |     |
| TRANSFER OF CHEMICAL PRODUCTS | 6/30/86    | 6/30/86        |     |

POLICY

1. There must be two active participants in any bulk loading/unloading or product repackaging, including transfers occurring during the weekend.
2. Participants, including truck drivers, MUST have visual contact with and be accessible to the transfer process to facilitate emergency response.
3. If the transfer involves products loading/unloading packaged freight, it is permissible to have only one active participant.

**MKIL40445**

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**McKesson**  
**Operations**

| Section                | Reference  | Page           | End |
|------------------------|------------|----------------|-----|
| REPACK                 | 20.10      | 1              | X   |
| Subject                | Issue Date | Effective Date |     |
| REPACKING - DEFINITION | 9/15/85    | 9/15/85        |     |

**DEFINITION**

A major portion of our efforts in the value-added distribution of chemicals involves the purchasing of products in bulk and repackaging these materials into smaller packages for end use by our customers. Because of government regulations, company liabilities, and need for protection of our employees, it is necessary to exercise various controls on repackaging, for example, the Request for Approval to Repackage, etc. To ensure understanding, the following is how McKesson defines "repackaging."

1. Transfer from bulk to any container, either at our plant or at our customer's plant.
2. Subdivision of any container to smaller ones.
3. Custom packaging by anyone into our containers or with the McKesson label.
4. Specification of blank labeling or other labeling on orders to suppliers.
5. Use of any trade mark or trade name on either our own labels or labels furnished by the supplier.
6. Removal or alteration of supplier's label for any purpose, such as, coding or adding any labeling requested by our customer.
7. Any modification by dilution, by addition of other materials, by compounding or mixing, or by other manipulation in any way.

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**McKesson**  
Operations

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| REPACK             | 20.20      | 1              |     |
| Subject            | Issue Date | Effective Date |     |
| SAMPLING PROCEDURE | 9/15/85    | 9/15/85        |     |

**GENERAL**

A sample, properly and safely obtained, correctly labeled and stored, is our only defense against the very real and growing threat of potential claims alleging that our bulk or repackaged products might be defective. Associated with any correctly administered sampling program are relatively small, finite costs in time, labor and materials. However, these costs seldom exceed those of a poorly run program. A poorly run program is like an almost empty fire extinguisher in that you have a false sense of security but very little real protection. Ultimately, your sampling program is another and very effective form of liability insurance, one you literally can not afford to do without.

In order to administer your sampling program properly you must keep in mind that it must be an absolute, consistent, all-or-nothing program. Any program that is 98% complete is just another form of liability Russian roulette.

Therefore, each and every inbound and outbound bulk shipment, as well as every repackaging run, must be properly sampled. If a tanktruck has multiple compartments, each individual compartment must be sampled even if more than one, or even all, contain the same product.

**SCOPE**

This procedure does not apply to compressed gases, food grade products or other products with physical properties intrinsically too hazardous to sample, such as Hydrofluoric Acid. (Contact your Area Operations Manager if you have any questions about product suitability for sampling, particularly for new products.)

**MKIL40447**

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**McKesson**  
**Operations**

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| REPACK             | 20.20      | 2              |     |
| Subject            | Issue Date | Effective Date |     |
| SAMPLING PROCEDURE | 9/15/85    | 9/15/85        |     |

**MATERIALS**

**1. Technical Information**

For each product your Service Center handles that may need to be sampled, technical information about the chemical and physical properties, as well as the physiological risk factors, must be on hand. If not, get this information promptly and make sure it is stored correctly so that it remains readily available for use. Sources include, but are not limited, to the following:

MSDS - Material Safety Data Sheets.

RIS - Repack Instruction Sheets, especially the Safety/Health section on the top of the back page.

Labels - NFPA Hazard Warnings

Technical Bulletins and other literature, both from suppliers and trade sources such as CMA (Chemical Manufacturers' Association), and occasionally from regulatory agencies themselves such as USEPA, USDOT, and OSHA.

**2. Personal Protective Equipment**

As required for safe handling and specified in the literature listed above. If there is any conflict between a RIS and any other source of technical information, comply with the RIS requirements for they are Company Policy.

No short-cuts here are ever permitted! Ever!

**3. Sampling Equipment**

**a. Containers and Seals (See Ex. 1)**

Varies with product; common sense rules apply.

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**McKesson**  
**Operations**

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| REPACK             | 20.20      | 3              |     |
| Subject            | Issue Date | Effective Date |     |
| SAMPLING PROCEDURE | 9/15/85    | 9/15/85        |     |

**MATERIALS**  
(Cont.)

NOTE: As analytical instruments have become increasingly more automatic, sophisticated and precise, the volume of sample material required for a reliable sample has declined dramatically. We used to deal in pints and quarts; now, either 4 oz. or 8 oz. samples do just as well.

b. Labels (See Ex. 1)

Sample bottles will be labeled with a hazard warning label which includes, at least:  
NFPA warning  
Supplier name  
Batch number  
Date of sampling.

c. Samplers or Thieves (See Ex. 1)

Must be inert or non-reactive with the material to be sampled and easy to clean; if mechanical in operation, they must be reliable with a positive shut-off control.

**PROCEDURES**

Two general principles:

First, know the product. An intimate knowledge of the product that has the potential to harm you is still the best form of protection.

Second, know the procedure. Sampling, like many other operational procedures, must be done properly in order to rely on the information it yields.

Some specific rules:

1. Like repackaging, sampling should never be performed by either unqualified individuals or by an individual working alone.
2. ALWAYS leave ullage (outage, or vapor space) in the sample container; NEVER fill a sample container liquid full.

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**McKesson**  
**Operations**

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| REPACK             | 20.20      | 4              |     |
| Subject            | Issue Date | Effective Date |     |
| SAMPLING PROCEDURE | 9/15/85    | 9/15/85        |     |

PROCEDURES  
(Cont.)

3. Labels should be completed neatly and applied promptly to avoid errors in accountability.
4. Any time weather conditions or mechanical conditions prevent routine sampling procedures, alternate procedures must be devised to prevent damage to equipment or exposure of our workers to unnecessary physical risk. Consult your Area Operations Manager if either of these circumstances should arise.

Sampling Bulk Movements:

1. In addition to the rules above, the sample container itself should be rinsed in the product to be sampled to ensure that no contaminants are present. Simply pour the rinsate back down the hatch, then proceed with the filling of the sample container.
2. To obtain a homogeneous sample of certain products of variable or high viscosity, take portions from different levels within the compartment, and make a composite or cross-sectional retained sample of small portions from various levels.
3. Whenever direct sampling through the hatch is impossible or unsafe, a retained sample may be withdrawn from the unloading line. This procedure has the potential for excess spillage, so it must be executed very carefully and precisely, and only after sufficient product has passed through the line to insure that the stream being sampled is free of residual contaminants that may have been present in the unloading line itself. One way to accomplish this would be to wait until all the product was unloaded and no further liquid was flowing, then "crack" one of the connection points in the line and use that seepage to fill the sample container. Obviously, a drip pan should be used at the sample point to contain any excess seepage.

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**McKesson**  
**Operations**

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| REPACK             | 20.20      | 5              |     |
| Subject            | Issue Date | Effective Date |     |
| SAMPLING PROCEDURE | 9/15/85    | 9/15/85        |     |

PROCEDURES  
(Cont.)

Sampling Repackaged Products

1. In addition to the rules above, all repack samples must be composite samples drawn from the second and one of the last five drums filled. A retained repack sample must be secured for each NIPO (job ticket).
2. Again, the container itself must be rinsed in the product being sampled. Apply the same procedures as above except that the rinsate is poured back into the drum.

LABELING

Permanent heavy-duty labels only are to be used. All marking must be done legibly with permanent ink to prevent fading or running. The lot number is derived from the purchase order or work order depending upon type.

RETENTION

Retention Periods

|                |          |
|----------------|----------|
| Bulk shipments | 3 months |
| Repack --      |          |
| Acids, Alkalis | 3 months |
| All others     | 6 months |

Retention Conditions

A closed, lockable container with adequate ventilation is best. Obviously, it must be inert to the sample material stored within. Interior heated storage is best to prevent product deterioration due to low ambient temperatures. Chronological control and product incompatibility demand that containers large enough to hold all retained samples be installed. The reduction in sample container size coupled with the reduction in retention periods means that most Service Centers should have enough physical space now. In almost every case, a Service Center with a "display-type" sample program excels in almost every other operational area, too. Those locations with shabby looking sample storage conditions almost invariably have poor samples stored therein and a host of other operational weaknesses without.

**McKesson**  
Operations

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| REPACK             | 20.20      | 6              | X   |
| Subject            | Issue Date | Effective Date |     |
| SAMPLING PROCEDURE | 9/15/85    | 9/15/85        |     |

**DISPOSAL**

Samples that have aged beyond their prescribed retention periods may be added carefully to bulk shipments out of the same product, current drum production lots, or part drums.

Samples subject to deterioration, such as Caustic Soda or Formaldehyde, should always be added to outgoing bulk shipments to ensure their thorough mixing and restoration by the agitation of the truck movement.

All questions about aged sample disposal should be addressed to your Area Operations Manager. Disposal should never be done without supervision. This process deserves the same degree of caution and protection as the initial sample acquisition process.

Additional disposal guidelines may be found in Reference 10.10, Hazardous Waste Policy.

**MKIL40452**

MK094862

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## SAMPLING PROCEDURES

### Sample Containers & Seals

Wheaton Scientific  
1000 N. 10th Street  
Millville, NJ 08332  
(609) 825-1400, ext. 2659

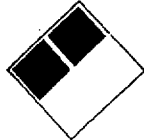
Smith Container Corp.  
P.O. Box 240384  
Charlotte, NC 28224

Package Supply & Equip.  
P.O. Box 1508, Sta. B  
Greenville, SC 29606

Many other national and local sources of supply too numerous to list.

### Labels

Usually locally printed, see example below:

|   |                        |
|---|------------------------|
|  | _____                  |
|   | Chemical               |
|   | Owner _____ Date _____ |

### Samplers

Fisher Scientific  
Model 14-209-52 is a good all-around thief  
Various sales offices nationally

Other good samplers available at local dealers servicing the bulk liquids industry.

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**McKesson**  
**Operations**

| Section          | Reference  | Page           | End |
|------------------|------------|----------------|-----|
| REPACK           | 20.30      | 1              |     |
| Subject          | Issue Date | Effective Date |     |
| CONTAINER LABELS | 3/10/86    | 3/10/86        |     |

**GENERAL**

It is the policy of McKesson Chemical Group that all products shipped or packaged will be properly labeled. There are to be no exceptions.

Recently, the Department of Transportation, the Department of Labor, and other government agencies have promulgated a complex maze of labeling regulations, stepped up enforcement activities, and increased penalties for violations. The following label procedures are designed to protect people handling the product, ensure regulatory compliance, forestall accidents, minimize liability claims, and control insurance and other costs.

McKesson Chemical Group has two types of drum labels available, standard labels and customized labels. Standard labels are inventoried at Advertising Distributors Company (ADC) and are available for immediate delivery to Service Centers. Exhibit 1 lists the standard McKesson Chemical labels and tags currently available through ADC. Exhibit 2 lists the McKesson Envirosystems labels available.

Customized labels are not inventoried but are produced by McKesson Printing Services (MPS) in small quantities upon request. Customized labels are much more expensive than standard labels and should be used for emergencies or special applications only. For example, customized labels may be used for blends, for products infrequently packaged, or for specialty products. Exhibit 3 lists the customized labels currently available through MPS. The following procedure describes the label order process for each type of label.

No product labels may be printed or xeroxed locally.

Anticipate label usage and inventory for only about a 6-month supply. Use labels on a first-in, first-out basis.

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**McKesson**  
Operations

| Section          | Reference  | Page           | End |
|------------------|------------|----------------|-----|
| REPACK           | 20.30      | 2              |     |
| Subject          | Issue Date | Effective Date |     |
| CONTAINER LABELS | 3/10/86    | 3/10/86        |     |

GENERAL  
(Cont.)

The label text may change from time to time as a result of newly discovered information or regulatory changes. When revisions occur all Service Centers will be notified, and each Service Center must destroy its stock of obsolete labels in order to prevent their use on subsequent product shipments. Replacement labels will be available, either at ADC or as a customized label.

When labels are revised, the date of that revision will be shown in the lower left corner. The date shown in Exhibits 1, 2 and 3 will also be changed so the exhibits will always indicate the current label.

PROCEDURE  
FOR  
STANDARD  
LABELS

1. Service Center initiates Purchase Order showing label title and number, quantity requested, and date needed and submits to Area Operations Manager.
2. Area Operations Manager approves Purchase Order and mails it to ADC.
3. ADC fills the order and returns the labels directly to the Service Center using the appropriate delivery service.
4. ADC invoices the Service Center directly for the labels and delivery charges. The invoice will be included in the label package as the packing list.

PROCEDURE  
FOR  
CUSTOMIZED  
LABELS

1. The Technical Director, Home Office, is told that a customized label is needed, and he is given the customer and product's name, the container and net weight, the number of containers to be repackaged, and the expected date of repackaging.
2. The Technical Director will draft the label text specifically for the product in question. He will coordinate the printing of the required number of copies with McKesson Printing Services (MPS).

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**McKesson**  
**Operations**

| Section          | Reference  | Page           | End |
|------------------|------------|----------------|-----|
| REPACK           | 20.30      | 3              |     |
| Subject          | Issue Date | Effective Date |     |
| CONTAINER LABELS | 3/10/86    | 3/10/86        |     |

PROCEDURE  
FOR  
CUSTOMIZED  
LABELS  
(Cont.)

3. MPS will send the finished labels directly to the Service Center by Air UPS service. The finished labels will be at the Service Center within 5 working days of notification to Home Office.
4. MPS will invoice the Service Center directly for the labels and delivery charges. The invoice will be included as the packing list.
5. The Service Center must retain at least one label specimen, in addition to all other supporting documentation, in its files in the event of future product liability or quality concerns. MPS will also retain a specimen label referenced to the customer name.
6. All unused custom labels must be destroyed. These labels must not be used for any product other than the one for which they were designed.
7. To purchase an existing custom label from Exhibit 3:
  - a. Service Center initiates Purchase Order showing label title and number, quantity requested, and date needed and submits to Area Operations Manager.
  - b. Area Operations Manager approves Purchase Order and mails it to MPS.
  - c. MPS fills the order and returns the labels directly to the Service Center using the appropriate delivery service.
  - d. MPS invoices the Service Center directly for the labels and delivery charges. The invoice will be included in the label package as the packing list.

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**McKesson**  
**Operations**

| Section          | Reference  | Page           | End |
|------------------|------------|----------------|-----|
| REPACK           | 20.30      | 4              | X   |
| Subject          | Issue Date | Effective Date |     |
| CONTAINER LABELS | 3/10/86    | 3/10/86        |     |

DOT  
REGULATED  
LABELS

A supply of the various diamond-shaped 4" x 4" DOT labels should be maintained at each stocking location, even those which do not repackage. This will allow replacement of faded DOT labels or correction of a labeling error by another facility.

There are a number of sources for these labels. One is:

Labelmaster  
6001 N. Clark Street  
Chicago, IL 60660

**MKIL40457**

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## STANDARD LABELS AND TAGS AVAILABLE

Labels are printed by Herlin Press, Inc. and stored by Advertising Distributors Co, 28 Railroad Ave, West Haven, CT 06516 (203) 933-2584, Mrs. Olly Lunde or Mr. Bob Mohr.

Invoices should be payable to Advertising Distributors Co.

### NOTES ON PRODUCT LABELS

1. Those product names with (R) following the word must only be used with the supplier of that brand of product. The (R) represents a national trademark and its use with suppliers' products is covered by signed agreements. Deviations of this by accidental contamination or error violates our agreements with these suppliers and voids product liability coverage normally present.
2. The standard label size is 7 x 14. This size may be used on all sizes of drums and portable tanks.
3. A 6 x 12 label is available for selected corrosives. This label is to be used on 30 gallon deldrums.
4. 3 x 12 labels are used on 15 gallon Heinz nitric acid drums.
5. 6 x 14 tags are used on 8 ½ gallon nitric acid bombs only.
6. The standard color for McKesson Chemical labels is red. The standard color for McKesson Envirosystems labels is green.
7. Some McKesson Chemical labels are available in blue and some in green. These labels must be used with specific products only because they are associated with special product quality requirements. Green labels indicate fluorocarbons of Freon (R) quality. Blue labels indicate products meeting semi-conductor industry standards.

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McKESSON CHEMICAL LABELS AND TAGS

| <u>PRODUCT</u>                  | <u>NUMBER</u> | <u>CURRENT<br/>DATE</u> | <u>NET WT<br/>(LBS)</u> | <u>COMMENTS</u>                 |
|---------------------------------|---------------|-------------------------|-------------------------|---------------------------------|
| Acetic Acid, Glacial            | A21-1D        | 0983                    | 450                     |                                 |
| Acetic Acid, 80%                | A21-1E        | 1183                    | 450                     |                                 |
| Acetone                         | A22-1         | 1083                    | 357                     |                                 |
| Acetone, SEMI                   | A22-1S        | 0884                    | 357                     | Blue Borders                    |
| Aircraft Deicing Fluid          | A23-1         | 0284                    | 500                     |                                 |
| Ambitrol CN                     | A26-1         | 0184                    | 519                     |                                 |
| Ammonia Anhydrous 4 x 4 DOT Tag | A28T6         | None                    | -                       |                                 |
| Ammonia Anhydrous 3 x 5 Tag     | A28T7         | None                    | -                       |                                 |
| Permanent Antifreeze            | A29-1         | 0184                    | 515                     |                                 |
| Aqua Ammonia, 26° Be            | A32-1C        | 0983                    | 385                     |                                 |
| Aqua Ammonia, 26° Be            | A32-9C        | 0983                    | 100                     | 6 x 12 inch                     |
| Liquid Bleach, Ind. Grade       | B23-1A        | 0983                    | 500                     | Burlington only                 |
| Liquid Bleach, Ind. Grade       | B23-1B        | 0684                    | Blank                   | Chattanooga only                |
| Liquid Bleach, Ind. Grade       | B23-1C        | 0983                    | 550                     | Geismar only                    |
| Liquid Bleach, Ind. Grade       | B23-1D        | 0983                    | 550                     | Greensboro only                 |
| Liquid Bleach, Ind. Grade       | B23-1E        | 0983                    | 550                     | Kansas City only                |
| Liquid Bleach, Ind. Grade       | B23-1F        | 0983                    | 550                     | Omaha only                      |
| Liquid Bleach, Ind. Grade       | B23-1G        | 0684                    | Blank                   | Phoenix only                    |
| Liquid Bleach, Ind. Grade       | B23-1H        | 0983                    | 550                     | San Francisco only              |
| Liquid Bleach, Ind. Grade       | B23-1I        | 0983                    | 550                     | Santa Fe Springs only           |
| Liquid Bleach, Ind. Grade       | B23-1J        | 0983                    | 550                     | Spartanburg only                |
| Liquid Bleach, Ind. Grade       | B23-1K        | 0983                    | 550                     | St. Louis only                  |
| Liquid Bleach, Ind. Grade       | B23-1L        | 0983                    | 550                     | Tampa only                      |
| Liquid Bleach, Ind. Grade       | B23-1M        | 0983                    | 550                     | Wichita only                    |
| Liquid Bleach, Ind. Grade       | B23-9B        | 0684                    | Blank                   | 6 x 12 inch<br>Chattanooga only |
| Liquid Bleach, Ind. Grade       | B23-9D        | 0684                    | Blank                   | 6 x 12 inch<br>Greensboro only  |
| Liquid Bleach, Ind. Grade       | B23-9J        | 0684                    | Blank                   | 6 x 12 inch<br>Spartanburg only |
| Liquid Bleach, Ind. Grade       | B23-9L        | 0684                    | Blank                   | 6 x 12 inch<br>Tampa only       |
| n-Butyl Acetate                 | B25.5-1       | 1083                    | 402                     |                                 |
| n-Butyl Acetate, SEMI           | B25.5-1S      | 0884                    | 402                     | Blue Borders                    |
| n-Butyl Alcohol                 | B26-1         | 1083                    | 374                     |                                 |
| sec-Butyl Alcohol               | B27-1         | 0184                    | 369                     |                                 |
| Butyl Carbitol                  | B28-1         | 1183                    | 440                     |                                 |
| Butyl Cellosolve                | B29-1         | 1183                    | 415                     |                                 |
| Butyl Cellosolve Acetate        | B30-1         | 0184                    | 432                     |                                 |
| Carbitol Solvent                | C23-1         | 0184                    | 450                     |                                 |
| Caustic Potash 45%              | C29-1B        | 0983                    | 660                     |                                 |
| Caustic Potash 50%              | C29-1D        | 1285                    | 660                     |                                 |
| Caustic Potash 45%, FCC         | C29-1E        | 0286                    | 660                     |                                 |
| Caustic Soda 50%                | C30-1B        | 0983                    | 680                     |                                 |
| Caustic Soda Beads              | C30-1C        | 0983                    | 500                     |                                 |

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## McKESSON CHEMICAL LABELS AND TAGS

| <u>PRODUCT</u>               | <u>NUMBER</u> | <u>CURRENT<br/>DATE</u> | <u>NET WT<br/>(LBS)</u> | <u>COMMENTS</u> |
|------------------------------|---------------|-------------------------|-------------------------|-----------------|
| Caustic Soda 50%, Rayon      | C30-1D        | 0286                    | 680                     |                 |
| Caustic Soda 50%             | C30-9B        | 1285                    | 350                     | 6 x 12 inch     |
| Cellosolve Acetate           | C31-1         | 1284                    | 445                     |                 |
| Cellosolve Solvent           | C32-1         | 1284                    | 425                     |                 |
| Chlorine 4 x 4 DOT Tag       | C38T6A        | None                    | -                       |                 |
| Chlorine 4 x 4 EPA Tag       | C38T7         | 1080                    | -                       |                 |
| Chlorothene VG               | C40-1         | 1183                    | 592                     |                 |
| Cyclohexanone                | C48-1         | 1183                    | 436                     |                 |
| Diacetone Alcohol            | D21-1         | 0184                    | 432                     |                 |
| Dibutyl Phthalate            | D22-1         | 0184                    | 470                     |                 |
| Diethanolamine 99%           | D22.5-1A      | 1183                    | 480                     |                 |
| Diethanolamine 85%           | D22.5-1B      | 1183                    | 480                     |                 |
| Diethylene Glycol            | D23-1         | 1183                    | 520                     |                 |
| Di-(2-Ethylhexyl)phthalate   | D24-1         | 0384                    | 450                     |                 |
| Dimethylformamide            | D25-1         | 0184                    | 430                     |                 |
| Dowanol DB                   | D27-1A        | 1183                    | 440                     |                 |
| Dowanol EB                   | D27-1B        | 1183                    | 415                     |                 |
| Dowanol EPH                  | D27-1D        | 0184                    | 505                     |                 |
| Dowanol IPM                  | D27-1E        | 0184                    | 445                     |                 |
| Ethyl Acetate 99%            | E21-1A        | 0184                    | 409                     |                 |
| Ethyl Acetate 85-88%         | E21-1B        | 0184                    | 401                     |                 |
| Ethylene Dichloride          | E24-1         | 0184                    | 573                     |                 |
| Ethylene Glycol              | E25-1C        | 1183                    | 519                     |                 |
| EDTA Chelating Agent         | E26-1         | 1184                    | 600                     |                 |
| Ferric Chloride 42°          | F21-1         | 0184                    | 600                     |                 |
| Formaldehyde Solution, 37%   | F24-1         | 1183                    | 490                     |                 |
| Formic Acid 90%              | F25-1         | 1183                    | 533                     |                 |
| Freon TF                     | F27-1         | 0184                    | 690                     | Green Borders   |
| Freon TA                     | F27-2         | 0184                    | 630                     | Green Borders   |
| Freon TE                     | F27-3         | 0184                    | 690                     | Green Borders   |
| Freon TES                    | F27-4         | 0184                    | 690                     | Green Borders   |
| Freon TMC                    | F27-5         | 0184                    | 630                     | Green Borders   |
| Freon TMS                    | F27-6         | 0184                    | 650                     | Green Borders   |
| Freon TP-10                  | F27-7         | 0184                    | 630                     | Green Borders   |
| Freon TP-35                  | F27-8         | 0184                    | 525                     | Green Borders   |
| Glycerin, Technical          | G23-1A        | 1183                    | 570                     |                 |
| Glycerin, 96%, USP           | G23-1B        | 1183                    | 570                     |                 |
| Glycerin, 99.5%, USP         | G23-1C        | 1183                    | 570                     |                 |
| Natural Glycerin, 96%, USP   | G23-1D        | 1183                    | 570                     |                 |
| Natural Glycerin, 99.5%, USP | G23-1E        | 1183                    | 570                     |                 |
| Glycol Ether DB              | G25-1         | 1183                    | 440                     |                 |
| Glycol Ether PM              | G25-1D        | 0184                    | 420                     |                 |
| Glycol Ether TPM             | G25-11        | 0184                    | 445                     |                 |
| Glycol Ether DE              | G25-2         | 0184                    | 450                     |                 |
| Glycol Ether DM              | G25-4         | 0184                    | 470                     |                 |

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McKESSON CHEMICAL LABELS AND TAGS

| <u>PRODUCT</u>                   | <u>NUMBER</u> | <u>CURRENT<br/>DATE</u> | <u>NET WT<br/>(LBS)</u> | <u>COMMENTS</u>                       |
|----------------------------------|---------------|-------------------------|-------------------------|---------------------------------------|
| Glycol Ether DPM                 | G25-5         | 1183                    | 435                     |                                       |
| Glycol Ether EB                  | G25-6         | 1183                    | 415                     |                                       |
| Glycol Ether EE                  | G25-7         | 1284                    | 425                     |                                       |
| Glycol Ether EM                  | G25-8         | 1284                    | 440                     |                                       |
| Glycol Ether EPH                 | G25-9         | 0184                    | 505                     |                                       |
| Hexylene Glycol                  | H21-1         | 1183                    | 427                     |                                       |
| Hydrochloric Acid 18°            | H22-1A        | 0983                    | 500                     |                                       |
| Hydrochloric Acid 20°            | H22-1B        | 0983                    | 500                     |                                       |
| Hydrochloric Acid 22%            | H22-1C        | 0983                    | 520                     |                                       |
| Hydrochloric Acid 18°            | H22-9A        | 0983                    | 140                     | 6 x 12 inch                           |
| Hydrochloric Acid 20°            | H22-9B        | 0983                    | 140                     | 6 x 12 inch                           |
| Hydrofluosilic Acid              | H24-1         | 0184                    | 500                     |                                       |
| Hydrofluosilic Acid              | H24-9         | 0983                    | 150                     | 6 x 12 inch                           |
| Hydrogen Peroxide 31% Reagent    | H25-1         | 1285                    | 480                     |                                       |
| Hydrogen Peroxide 35%            | H25-2         | 0184                    | 500                     |                                       |
| Hydrogen Peroxide 50%            | H25-3         | 0184                    | 500                     |                                       |
| Hydroxyacetic Acid               | H26-1         | 1183                    | 550                     |                                       |
| Hydrogen Peroxide, 35%           | H27-1         | 1285                    | 500                     |                                       |
| Hydrogen Peroxide, 35%, Cosmetic | H27-1A        | 1285                    | 500                     |                                       |
| Hydrogen Peroxide, 35%, Food     | H27-1B        | 1285                    | 500                     |                                       |
| Hydrogen Peroxide, 35%, Cosmetic | H27-9A        | 1285                    | 275                     | 6 x 12 inch                           |
| Hydrogen Peroxide, 35%, Food     | H27-9B        | 1285                    | 275                     | 6 x 12 inch                           |
| Hydrogen Peroxide, 50%           | H28-1         | 1285                    | 500                     |                                       |
| Hydrogen Peroxide, 50%, Cosmetic | H28-1A        | 1285                    | 500                     |                                       |
| Hydrogen Peroxide, 50%, Food     | H28-1B        | 1285                    | 500                     |                                       |
| Hydrogen Peroxide, 50%, Cosmetic | H28-9A        | 1285                    | 275                     | 6 x 12 inch                           |
| Hydrogen Peroxide, 50%, Food     | H28-9B        | 1285                    | 275                     | 6 x 12 inch                           |
| Isobutyl Acetate                 | I21.5-1       | 1083                    | 397                     |                                       |
| Isopropanol Technical            | I22-1B        | 1083                    | 355                     |                                       |
| Isopropanol, ACS/NF              | I22-1D        | 1083                    | 355                     |                                       |
| Isopropanol, 70%, USP            | I22-1E        | 0984                    | 401                     |                                       |
| Isopropanol, SEMI                | I22-1S        | 0884                    | 355                     | Blue Borders                          |
| McKSolv FICC                     | M23-1         | 1284                    | 604                     | Green Borders                         |
| McKSolv TP-50                    | M24-1         | 1284                    | 465                     | Green Borders                         |
| Methanol                         | M26-1         | 1083                    | 358                     |                                       |
| Methanol, SEMI                   | M26-1S        | 0884                    | 358                     | Blue Borders                          |
| Methyl Cellosolve                | M28-1         | 1284                    | 440                     |                                       |
| Methylene Chloride               | M29-1         | 1183                    | 600                     |                                       |
| Methyl Ethyl Ketone              | M30-1         | 1083                    | 366                     |                                       |
| Methyl Ethyl Ketone, SEMI        | M30-1S        | 0884                    | 366                     | Blue Borders                          |
| Methyl Amyl Alcohol              | M30.5-1       | 1183                    | 371                     | old name: Methyl<br>Isobutyl Carbinol |
| Methyl Isobutyl Ketone           | M31-1         | 1083                    | 366                     |                                       |
| Mineral Spirits                  | M34.5-1       | 1183                    | 350                     |                                       |
| Monoethanolamine                 | M35-1         | 0983                    | 460                     |                                       |

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MKIL189462

## McKESSON CHEMICAL LABELS AND TAGS

| <u>PRODUCT</u>             | <u>NUMBER</u> | <u>CURRENT<br/>DATE</u> | <u>NET WT<br/>(LBS)</u> | <u>COMMENTS</u>             |
|----------------------------|---------------|-------------------------|-------------------------|-----------------------------|
| Morpholine                 | M36-1         | 1183                    | 445                     |                             |
| White Mineral Oil 70, USP  | M37-1         | 0284                    | 385                     |                             |
| White Mineral Oil 90, USP  | M37-2         | 0284                    | 385                     |                             |
| White Mineral Oil 200, USP | M37-3         | 0284                    | 390                     |                             |
| White Mineral Oil 350, USP | M37-4         | 0284                    | 395                     |                             |
| Naptha, VM&P               | N21-1         | 0184                    | 337                     |                             |
| Nitric Acid 36°            | N24-1A        | 1285                    | 600                     |                             |
| Nitric Acid 38°            | N24-1B        | 0983                    | 600                     |                             |
| Nitric Acid 40°            | N24-1C        | 1285                    | 600                     |                             |
| Nitric Acid 42°            | N24-1D        | 0983                    | 600                     |                             |
| Nitric Acid 36°            | N24-2A        | 1285                    | 165                     |                             |
| Nitric Acid 38°            | N24-2B        | 1285                    | 170                     |                             |
| Nitric Acid 40°            | N24-2C        | 1285                    | 170                     |                             |
| Nitric Acid 42°            | N24-2D        | 1285                    | 170                     |                             |
| Nitric Acid 36°            | N24-3A        | 0486                    | 85                      | 6 x 14 Tag                  |
| Nitric Acid 38°            | N24-3B        | 0486                    | 90                      | 6 x 14 Tag                  |
| Nitric Acid 42°            | N24-3D        | 0486                    | 95                      | 6 x 14 Tag                  |
| Nitric Acid 35%            | N24-9E        | 0486                    | 140                     | 6 x 12 inch; Corrosive only |
| Perchloroethylene          | P22-1         | 1183                    | 700                     |                             |
| Phosphoric Acid 75%        | P24-1A        | 0983                    | 700                     |                             |
| Phosphoric Acid 85%        | P24-1B        | 0983                    | 700                     |                             |
| Phosphoric Acid 75% FCC    | P24-1C        | 1284                    | 700                     |                             |
| Phosphoric Acid 85% FCC    | P24-1D        | 0286                    | 700                     |                             |
| Phosphoric Acid 75%        | P24-9A        | 0983                    | 200                     | 6 x 12 inch                 |
| Phosphoric Acid 85%        | P24-9B        | 0983                    | 200                     | 6 x 12 inch                 |
| Phosphoric Acid 75% FCC    | P24-9C        | 0286                    | 200                     | 6 x 12 inch                 |
| Phosphoric Acid 85% FCC    | P24-9D        | 0286                    | 200                     | 6 x 12 inch                 |
| n-Propanol                 | P30.5-1       | 1083                    | 370                     |                             |
| Propylene Glycol Technical | P31-1A        | 1183                    | 480                     |                             |
| Propylene Glycol USP       | P31-1B        | 1183                    | 480                     |                             |
| Propylene Glycol, Ind.     | P31-1C        | 0484                    | 480                     |                             |
| Sample                     | S-10-0        | 0486                    | -                       |                             |
| Sentinel                   | S28-1         | 0585                    | 50                      |                             |
| Sodium Hypochlorite Sol.   | S32-1A        | 0684                    | Blank                   | Burlington only             |
| Sodium Hypochlorite Sol.   | S32-1E        | 0684                    | Blank                   | Kansas City only            |
| Sodium Hypochlorite Sol.   | S32-1F        | 0684                    | Blank                   | Omaha only                  |
| Sodium Hypochlorite Sol.   | S32-1I        | 0684                    | Blank                   | Santa Fe Springs only       |
| Sodium Hypochlorite Sol.   | S32-1K        | 0684                    | Blank                   | St. Louis only              |
| Sodium Hypochlorite Sol.   | S32-1M        | 0684                    | Blank                   | Wichita only                |
| Sodium Silicate            | S37-1         | 0184                    | Blank                   |                             |
| Sorbitol 70% USP           | S38-1B        | 1183                    | 570                     |                             |
| Styrene                    | S45-1         | 1083                    | 410                     |                             |
| Sulfur Dioxide 3 x 5 Tag   | S46.5T7       | 0577                    | -                       |                             |
| Sulfuric Acid 66°          | S47-1A        | 0983                    | 700                     |                             |
| Sulfuric Acid 66°          | S47-9A        | 0983                    | 225                     | 6 x 12 inch                 |

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McKESSON CHEMICAL LABELS AND TAGS

| <u>PRODUCT</u>        | <u>NUMBER</u> | <u>CURRENT<br/>DATE</u> | <u>NET WT<br/>(LBS)</u> | <u>COMMENTS</u> |
|-----------------------|---------------|-------------------------|-------------------------|-----------------|
| Tergitol 15-S-7       | T21-1A        | 0284                    | 450                     |                 |
| Tergitol 15-S-9       | T21-1B        | 0284                    | 460                     |                 |
| Tergitol 15-S-3       | T21-1C        | 0284                    | 430                     |                 |
| Tergitol 15-S-12      | T21-1D        | 0284                    | 460                     |                 |
| Tetrahydrofuran       | T22-1         | 1183                    | 400                     |                 |
| Toluene               | T23-1         | 1083                    | 390                     |                 |
| 1,1,1-Trichloroethane | T24-1         | 1183                    | 592                     |                 |
| Trichloroethylene     | T25-1         | 1183                    | 660                     |                 |
| Triethanolamine 99%   | T27-1A        | 1183                    | 510                     |                 |
| Triethanolamine 85%   | T27-1B        | 1183                    | 510                     |                 |
| Triethylene Glycol    | T28-1         | 1183                    | 520                     |                 |
| Triton N-57           | T30-1         | 0284                    | 460                     |                 |
| Triton X-100          | T30-2         | 0284                    | 480                     |                 |
| Triton N-101          | T30.5-1       | 0284                    | 480                     |                 |
| Triton X-45           | T30.5-2       | 0284                    | 470                     |                 |
| Triton X-102          | T30.5-3       | 0284                    | 480                     |                 |
| Triton X-114          | T30.5-4       | 0284                    | 480                     |                 |
| Tamol 850             | T31-1         | 0284                    | 505                     |                 |
| Versene 100           | V21-1         | 0184                    | 600                     |                 |
| Versenol 120          | V22-1         | 0184                    | 580                     |                 |
| Versenex 80           | V23-1         | 0184                    | 600                     |                 |
| Xylene                | X21-1         | 1083                    | 390                     |                 |
| Xylene, SEMI          | X21-1S        | 0884                    | 390                     | Blue Borders    |

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**McKESSON ENVIROSYSTEMS LABELS AND TAGS**

| <u>PRODUCT</u>        | <u>NUMBER</u> | <u>CURRENT<br/>DATE</u> | <u>NET WT<br/>(LBS)</u> |
|-----------------------|---------------|-------------------------|-------------------------|
| Acetone               | EA22-1        | 1183                    | 357                     |
| Cyclesolv AT-100      | EA36-1        | 0784                    | Blank                   |
| Cyclesolv AT-101      | EA37-1        | 0784                    | Blank                   |
| McKSolv Colsol        | EG23-1        | 1183                    | 54 gal                  |
| McKSolv EPS           | EE24-1        | 1183                    | 54 gal                  |
| McKSolv TF            | EF27-1        | 0184                    | 690                     |
| McKSolv TMC           | EF27-5        | 0184                    | 630                     |
| McKSolv Fiberclean    | EF28-1        | 1183                    | 54 gal                  |
| McKSolv Flushsolv #6  | EF29-1        | 1183                    | 54 gal                  |
| McKSolv Fluxsolv      | EF30-1        | 1183                    | 54 gal                  |
| Isopropyl Alcohol     | EI22-1        | 1183                    | 355                     |
| Cyclesolv LT-400      | EL21-1        | 0784                    | Blank                   |
| Methylene Chloride    | EM29-1        | 1183                    | 600                     |
| Methyl Ethyl Ketone   | EM30-1        | 1183                    | 366                     |
| Perchloroethylene     | EP22-1        | 1183                    | 700                     |
| Cyclesolv ST-501      | ES22-1        | 0784                    | Blank                   |
| Cyclesolv ST-502      | ES23-1        | 0784                    | Blank                   |
| 1,1,1-Trichloroethane | ET24-1        | 1183                    | 592                     |
| Trichloroethylene     | ET25-1        | 1183                    | 660                     |

**MKIL40464**

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Respiration

MKIL40465

PR034075

MKIL189466

**McKesson**  
**Operations**

| Section                 | Reference  | Page           | End |
|-------------------------|------------|----------------|-----|
| TRANSPORTATION          | 30.40      | 1              |     |
| Subject                 | Issue Date | Effective Date |     |
| TRUCK FLEET MAINTENANCE | 9/15/85    | 9/15/85        |     |

**GENERAL**

There are two types of truck maintenance: 1) demand maintenance, or repairs that must be done on demand when breakdowns occur; and 2) preventive maintenance, or planned maintenance programs to head off failures.

The money spent on maintaining trucks is and always will be an expense item on the books, but the money spent unnecessarily on maintenance, such as when a breakdown that could be prevented occurs, goes further than that. It becomes a direct drain on your profits.

Planning a maintenance program to head off as many unexpected expenses as possible will mean extra dollars in the profit column.

The McKesson Chemical Group has in the past few years converted very heavily from gasoline trucks to late model diesel units as part of our energy program. To further maximize the fuel efficiency needed in this period of rapidly rising fuel costs, we must keep our trucks in peak operating condition. This can only be achieved through proper spec'ing, ongoing driver training, a good tachograph program, and a well managed fleet. A basic essential to a properly managed fleet is a good PM (Preventive Maintenance) program which management is strongly committed to carrying out.

The following Preventive Maintenance Program shall be standard procedure. However, it is not essential to follow this guide exactly as written if you currently have another good program (Some of our trucks are repaired by Foremost Dairies and follow their PM program; some have their own shops and follow slightly dissimilar programs set up by truck manufacturers; and some are on a contract maintenance program.)

If any service center is currently not following a PM program similar to the attached Exhibits, they should discuss it with their Regional Operations Manager who will help them put a program into effect.

**MKIL40466**

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**McKesson**  
**Operations**

| Section                 | Reference  | Page           | End |
|-------------------------|------------|----------------|-----|
| TRANSPORTATION          | 30.40      | 2              | X   |
| Subject                 | Issue Date | Effective Date |     |
| TRUCK FLEET MAINTENANCE | 9/15/85    | 9/15/85        |     |

**EXHIBITS**

The following exhibits are self-explanatory:

- Exhibit 1 - PM Procedure for Diesel Powered Units
- Exhibit 1a - Worksheet A for high mileage diesel
- Exhibit 1b - Worksheet B for high mileage diesel
- Exhibit 1c - Worksheet C for high mileage diesel
- Exhibit 2 - PM Procedure for Gasoline Powered Units
- Exhibit 2a - Worksheet A for gasoline powered units
- Exhibit 2b - Worksheet B for gasoline powered units
- Exhibit 2c - Worksheet C for gasoline powered units
- Exhibit 3 - PM Procedure for Trailers (Cargo tank inspection should incorporate the same procedure with separate attention given to the tank & fittings.)
- Exhibit 3a - Worksheet for trailer preventive maintenance

**ADDITIONAL**

The above programs do not address themselves to the daily routine of safety pre-inspection or adding oil or fuel as needed.

Further, it is important that 1) at all intervals, check the condition and status of placards, repair and replace as needed, and 2) at all intervals, check condition and operation of liftgates.

It has been recommended that at every "C" interval, any Mack diesel engine should have the heads retorqued. Special equipment, such as power take-off pumps, Dunbar unloaders, hoists, cranes, etc., as part of trucks or trailers, should be inspected at all intervals. (Special instructions and checklists should be prepared to meet manufacturer's suggestions.)

**MKIL40467**

MK094877

PREVENTIVE MAINTENANCE

Diesel Powered Units

Equipped without a lubrifier

- A. Service every 6,000 miles
- B. Service every 24,000 miles
- C. Service every 48,000 miles

(Oil change every 12,000 miles)

Equipped with a lubrifier

- A. Service every 8,000 miles
- B. Service every 24,000 miles
- C. Service every 48,000 miles

(Oil change every 16,000 miles)

Estimated Labor Cost

- A. Service inspection 4-6 hours
- B. Service inspection 9-11 hours
- C. Service inspection 16-18 hours
- (1) Second "C" inspection 23-25 hours

USE ALL MANUFACTURERS' RECOMMENDED

OIL - LUBE - ADJUSTMENTS

| <u>Miles</u> | <u>PM</u> | <u>Oil Change</u> | <u>Miles</u> | <u>PM</u> | <u>Oil Change</u> |
|--------------|-----------|-------------------|--------------|-----------|-------------------|
| 6,000        | A         | No                | 8,000        | A         | No                |
| 12,000       | A         | Yes               | 16,000       | A         | Yes               |
| 18,000       | A         | No                | 24,000       | B         | No                |
| 24,000       | B         | Yes               | 32,000       | A         | Yes               |
| 30,000       | A         | No                | 40,000       | A         | No                |
| 36,000       | A         | Yes               | 48,000       | C         | Yes               |
| 42,000       | A         | No                |              |           |                   |
| 48,000       | C         | Yes               |              |           |                   |

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# Diesel

## PREVENTIVE MAINTENANCE INSPECTION HIGH MILEAGE DIESEL

# A

TRUCK NO. \_\_\_\_\_ DATE \_\_\_\_\_

MILEAGE \_\_\_\_\_ LOCATION \_\_\_\_\_

MILES SINCE LAST P.M. \_\_\_\_\_

INSPECTION CODE:    ✓ = OK                    O = FOLLOW-UP NEEDED                    X = ADJUSTMENT MADE

[illegible]

ITEMS NOT LISTED ON THIS FORM BUT FOUND TO BE IN NEED  
OF ATTENTION ARE TO BE NOTED ON REVERSE SIDE

ROAD TEST

CORRECT P.M. INSP. STICKER \_\_\_\_\_

P.M. PERFORMED BY

**MKIL40469**



Foremost-McKesson, Inc.

MK094879

MKIL189470





CHEM OP 30.40 Exhibit 1b  
9/15/85 9/15/85  
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B

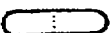
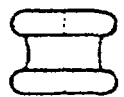
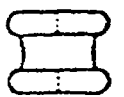
## PREVENTIVE MAINTENANCE INSPECTION HIGH MILEAGE DIESEL

MILES SINCE LAST P.M. \_\_\_\_\_

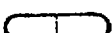

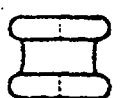
INSPECTION CODE:     ✓ = OK                     O = FOLLOW-UP NEEDED                     X = ADJUSTMENT MADE

| DRIVE ON INSPECTION                       |  |  |
|---|--|--|
| CHECK SPRING PARKING BRAKE                |  |  |
| CHECK CLUTCH PEDAL FREE TRAVEL            |  |  |
| CHECK ODOMETER SEALS                      |  |  |
| AIR PRESS. DROP/LB/MIN.-BRAKES APPLIED    |  |  |
| CHECK LOW AIR PRESSURE WARNING DEVICE     |  |  |
| CHECK TRACTOR PROTECTION VALVE            |  |  |
| CIRCLE INSPECTION                         |  |  |
| CHECK INNER AND OUTER HUBS FOR LUBE LEAKS |  |  |
| CHECK FUEL TANK MOUNTING                  |  |  |
| CHECK 5TH WHEEL MOUNTING AND CONDITION    |  |  |
| TIRE AND WHEEL INSPECTION                 |  |  |
| CHECK REMAINING TREAD                     |  |  |
| CHECK TIRES FOR CORRECT AIR PRESSURE      |  |  |
| CHECK WHEELS FOR CRACKS OR LOOSE LUGS     |  |  |
| BATTERY INSPECTION                        |  |  |
| CHECK FOR SIGNS OF OVERCHARGING           |  |  |
| ADD WATER TO PROPER LEVEL                 |  |  |
| CHECK FOR CORROSION                       |  |  |
| CHECK TERMINALS AND CABLES                |  |  |
| CHECK BATTERY HOLD-DOWNS                  |  |  |

| ENGINE COMPARTMENT INSPECTION   |  |  |
|---|--|--|
| CHECK ANTI-FREEZE (IN SEASON)   |  |  |
| FILL COOLING SYSTEM   |  |  |
| CHECK HOSE CONDITION  |  |  |
| CHECK ALL BELTS FOR CONDITION & ADJUSTMENT  |  |  |
| CHECK FAN ASSEMBLY FOR LOOSENESS  |  |  |
| CHECK RADIATOR MOUNTING & FAN SHROUD  |  |  |
| CHECK ENGINE FOR OIL LEAKS  |  |  |
| UNDER VEHICLE INSPECTION  |  |  |
| CHECK TRANSMISSION FOR LEAKS  |  |  |
| CHECK DIFFERENTIALS AND AXLES FOR LEAKS   |  |  |
| CHECK AXLE BREATHERS  |  |  |
| CHECK ENGINE AND TRANSMISSION MOUNTS  |  |  |
| CHECK DRIVE LINES, "U" JOINTS AND SLIP YOKES  |  |  |
| CHECK FOR LOOSE "U" BOLTS & SPRING HANGERS  |  |  |
| CHECK BRAKE ADJUSTMENT  |  |  |
| CHECK BRAKE CHAMBER HOSES FOR CHAFING   |  |  |
| CHECK ENTIRE STEERING FOR LOOSENESS<br>(TIE ROD ENDS, STEERING ARMS, DRAG LINK,<br>IDLER ARM, PITMAN ARM, STEERING BOX,<br>STEERING SHAFT SPLINES AND JOINTS) |  |  |
| CHECK STEERING BOX FOR LEAKS  |  |  |
| RAISE FRONT END   |  |  |
| CHECK KING PINS FOR WEAR  |  |  |
| CHECK FRONT WHEEL BEARINGS FOR LOOSENESS  |  |  |

ITEMS NOT LISTED ON THIS FORM BUT FOUND TO BE IN NEED  
OF ATTENTION ARE TO BE NOTED ON REVERSE SIDE.

## ROAD TEST

CORRECT P.M. INSP STICKER

P.M. PERFORMED BY \_\_\_\_\_

**FOREMOST** Foremost-McKesson, Inc.

**MKIL40471**

MK094881

MKIL189472

**"B" PREVENTIVE MAINTENANCE  
HIGH MILEAGE DIESEL**

| LUBRICATION   |  | DIESEL ENGINE SERVICE   |  |
|---|--|---|--|
| LUBRICATE CHASSIS & ACCESSORIES                                   |  | CHECK FOR UNUSUAL ENGINE NOISES,<br>SURGING OR MISSING  |  |
| REFER TO CHART  |  | CHECK ALL GOVERNOR AND PUMP SEALS (ANY<br>MISSING SEALS OR SIGNS OF TAMPERING<br>MUST BE REPORTED TO SHOP MANAGEMENT) |  |
| LUBRICATE DOOR LATCHES & HINGES                                   |  | DRAIN ANY WATER PRESENT FROM EACH FUEL<br>FILTER EQUIPPED WITH A DRAIN COCK   |  |
| CHECK ALL LUBRICANT LEVELS  |  | CHECK EMERGENCY SHUT DOWN (GMI)   |  |
| a. ENGINE OIL LEVEL   |  | ON OIL CHANGE INTERVAL (Use Mfg. specs.)<br>DO THE FOLLOWING SERVICES   |  |
| b. FRONT WHEEL OIL LEVEL  |  | CHANGE ENGINE OIL   |  |
| c. STEERING BOX   |  | CHANGE OIL FILTERS  |  |
| d. TRANSMISSIONS  |  | CHANGE FUEL FILTERS (EXCEPT LARGE<br>INDUSTRIAL TYPES)  |  |
| e. DIFFERENTIALS  |  | CHANGE PERRY WATER FILTER   |  |
| f. TWO SPEED MOTOR  |  | CLEAN OR REPLACE CRANKCASE BREATHER   |  |
| REAR BRAKE LINING INSPECTION "S CAM"                              |  | RUN ENGINE-RECHECK FOR FUEL & OIL LEAKS   |  |
| REMOVE LOWER DUST SHIELD  |  | BLEED AIR FROM LUBRIFINER COVER   |  |
| RECORD DRUM CONDITION   |  | ROAD TEST INSPECTION  |  |
| RECORD REMAINING LINING %   |  | CHECK STEERING FEEL   |  |
| REAR BRAKE LINING INSPECTION "WEDGE"                              |  | CHECK SHIFTING EASE   |  |
| INSPECT LINING THICKNESS THRU<br>INSPECTION HOLES IN DUST SHIELDS |  | CHECK BRAKE FEEL  |  |
| RECORD REMAINING LINING %   |  | CHECK ENGINE OPERATION  |  |
| CRANKING MOTOR INSPECTION   |  | CHECK CAB AND DOOR RATTLES  |  |
| MAKE VISUAL INSPECTION OF STARTER                                 |  | CHECK CAB HEATER  |  |
| CHECK OPERATION OF STARTER  |  | CHECK CAB AIR CONDITIONER   |  |
| MAKE ELECTRICAL STARTER TEST                                      |  |   |  |
| CHARGING SYSTEM TEST  |  |   |  |
| CHECK MAXIMUM ALTERNATOR OUTPUT                                   |  |   |  |
| CHECK MAXIMUM CHARGING VOLTAGE                                    |  |   |  |
| AIR CLEANER SERVICE   |  |   |  |
| DRY TYPE  |  |   |  |
| a. RECORD AIR RESTRICTION   |  |   |  |
| b. IF RESTRICTION EXCEEDS 18" H <sub>2</sub> O,<br>CHANGE ELEMENT |  |   |  |
| OIL BATH  |  |   |  |
| a. CLEAN CENTER TUBE & PAN  |  |   |  |
| b. FILL PAN TO PROPER LEVEL                                       |  |   |  |
| c. CHECK PAN GASKET   |  |   |  |
| CHECK AIR INTAKE PIPES & CONNECTIONS                              |  |   |  |

DRIVER'S EXPLANATION:

GARAGE'S REMARKS:

DRIVER

SIGNED

MKIL40472

Garage Supervisor

MK094882

MKIL189473



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## PREVENTIVE MAINTENANCE INSPECTION HIGH MILEAGE DIESEL

C

MILES SINCE LAST P.M. \_\_\_\_\_

INSPECTION CODE:    ✓ = OK                    0 = FOLLOW-UP NEEDED                    X = ADJUSTMENT MADE

| DRIVE ON INSPECTION                       |  |  |  | ENGINE COMPARTMENT INSPECTION  |  |  |  |
|---|--|--|--|--|--|--|--|
| CHECK SPRING PARKING BRAKE                |  |  |  | CHECK ANTI-FREEZE (IN SEASON)  |  |  |  |
| CHECK CLUTCH PEDAL FREE TRAVEL            |  |  |  | FILL COOLING SYSTEM  |  |  |  |
| CHECK ODOMETER SEALS                      |  |  |  | CHECK HOSE CONDITION   |  |  |  |
| AIR PRESS. DROP/LB/MIN.—BRAKES APPLIED    |  |  |  | CHECK ALL BELTS FOR CONDITION & ADJUSTMENT   |  |  |  |
| CHECK LOW AIR PRESSURE WARNING DEVICE     |  |  |  | CHECK FAN ASSEMBLY FOR LOOSENESS   |  |  |  |
| CHECK TRACTOR PROTECTION VALVE            |  |  |  | CHECK RADIATOR MOUNTING & FAN SHROUD   |  |  |  |
| CIRCLE INSPECTION                         |  |  |  | CHECK ENGINE FOR OIL LEAKS   |  |  |  |
| CHECK INNER AND OUTER HUBS FOR LUBE LEAKS |  |  |  | UNDER VEHICLE INSPECTION   |  |  |  |
| CHECK FUEL TANK MOUNTING                  |  |  |  | CHECK TRANSMISSION FOR LEAKS   |  |  |  |
| CHECK 5TH WHEEL MOUNTING AND CONDITION    |  |  |  | CHECK DIFFERENTIALS AND AXLES FOR LEAKS  |  |  |  |
| TIRE AND WHEEL INSPECTION                 |  |  |  | CHECK AXLE BREATHERS   |  |  |  |
| CHECK REMAINING TREAD                     |  |  |  | CHECK ENGINE AND TRANSMISSION MOUNTS   |  |  |  |
| CHECK TIRES FOR CORRECT AIR PRESSURE      |  |  |  | CHECK DRIVE LINES, "U" JOINTS AND SLIP YOKES   |  |  |  |
| CHECK WHEELS FOR CRACKS OR LOOSE LUGS     |  |  |  | CHECK FOR LOOSE "U" BOLTS & SPRING HANGERS   |  |  |  |
| BATTERY INSPECTION                        |  |  |  | CHECK BRAKE ADJUSTMENT   |  |  |  |
| CHECK FOR SIGNS OF OVERCHARGING           |  |  |  | CHECK BRAKE CHAMBER HOSES FOR CHAFING  |  |  |  |
| ADD WATER TO PROPER LEVEL                 |  |  |  | CHECK ENTIRE STEERING FOR LOOSENESS  |  |  |  |
| CHECK FOR CORROSION                       |  |  |  | (TIE ROD ENDS, STEERING ARMS, DRAG LINK, IDLER ARM, PITMAN ARM, STEERING BOX, STEERING SHAFT SPLINES AND JOINTS) |  |  |  |
| CHECK TERMINALS AND CABLES                |  |  |  | CHECK STEERING BOX FOR LEAKS   |  |  |  |
| CHECK BATTERY HOLD-DOWNS                  |  |  |  | RAISE FRONT END  |  |  |  |
|   |  |  |  | CHECK KING PINS FOR WEAR   |  |  |  |
|   |  |  |  | CHECK FRONT WHEEL BEARINGS FOR LOOSENESS   |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |

ITEMS NOT LISTED ON THIS FORM BUT FOUND TO BE IN NEED  
OF ATTENTION ARE TO BE NOTED ON REVERSE SIDE.

ROAD TEST \_\_\_\_\_

CORRECT P.M. INSP. STICKER\_

P.M. PERFORMED BY



Foremost-McKesson, Inc.

**MKIL40473**

MK094883

MKIL189474

| LUBRICATION  |  | DIESEL ENGINE SERVICE   |  |
|--|--|---|--|
| LUBRICATE CHASSIS & ACCESSORIES  |  | CHECK FOR UNUSUAL ENGINE NOISES, SURGING OR MISSING   |  |
| REFER TO CHART   |  | CHECK ALL GOVERNOR & PUMP SEALS (ANY MISSING SEALS OR SIGNS OF TAMPERING MUST BE REPORTED TO SHOP MANAGEMENT) |  |
| LUBRICATE DOOR LATCHES & HINGES  |  | CHANGE FUEL FILTERS   |  |
| CHECK ALL LUBRICANT LEVELS   |  | CLEAN FUEL PUMP SCREEN (CUMMINS)  |  |
| a. ENGINE OIL LEVEL  |  | CHECK EMERGENCY SHUT DOWN (GM)  |  |
| b. FRONT WHEEL OIL LEVEL   |  | LUBRICATE FAN HUB AND WATER PUMP  |  |
| c. STEERING BOX  |  | <b>DIESEL ENGINE TUNE-UP (140° OIL TEMP)</b>  |  |
| d. CHANGE TRANSMISSION LUBE & FILTER   |  | SET VALVES AND INJECTORS (CUMMINS)  |  |
| e. CHANGE DIFFERENTIAL LUBE  |  | CHECK RAIL PRESSURE AND RECORD PSI  |  |
| f. TWO SPEED MOTOR   |  | SET VALVES, INJECTOR HEIGHT & RACK (GM)   |  |
| <b>REAR BRAKE LINING INSPECTION "S CAM"</b>                                    |  | SET VALVE TAPPETS (MACK)  |  |
| REMOVE LOWER DUST SHIELD   |  | CHECK HIGH IDLE RPM WITH MASTER TACK  |  |
| RECORD DRUM CONDITION  |  | <b>ON SECOND "C" INSPECTION ONLY</b>  |  |
| RECORD REMAINING LINING %  |  | PULL INJECTORS, CLEAN & FLOW TEST (CUMMINS)   |  |
| <b>REAR BRAKE LINING INSPECTION "WEDGE"</b>                                    |  | PULL ALTERNATOR AND OVERHAUL  |  |
| INSPECT LINING THICKNESS THRU INSPECTION HOLES IN DUST SHIELDS                 |  | PULL STARTER AND OVERHAUL   |  |
| RECORD REMAINING LINING %  |  | PULL SERIES PARALLEL SWITCH AND OVERHAUL  |  |
| <b>FRONT WHEEL PULL</b>  |  | <b>ON OIL CHANGE INTERVAL (Use Mfg. specs.)</b>   |  |
| REMOVE, CLEAN, INSPECT & LUBRICATE EVERY "C"                                   |  | <b>DO THE FOLLOWING SERVICES</b>  |  |
| <b>REAR WHEEL PULL (PACKED TYPE)</b>   |  | CHANGE ENGINE OIL   |  |
| REMOVE, CLEAN, INSPECT & REPACK EVERY "C"                                      |  | CHANGE OIL FILTERS  |  |
| <b>REAR WHEEL PULL (RUNNING IN OIL)</b>  |  | CHANGE PERRY WATER FILTER   |  |
| REMOVE ONLY IF BRAKE WORK IS NECESSARY OR IF WHEEL BEARINGS ARE LOOSE OR NOISY |  | CLEAN OR REPLACE CRANKCASE BREATHER   |  |
| <b>CRANKING MOTOR INSPECTION</b>   |  | RUN ENGINE - RECHECK FOR FUEL & OIL LEAKS   |  |
| MAKE VISUAL INSPECTION OF STARTER  |  | BLEED AIR FROM LUBRIFINER COVER   |  |
| CHECK OPERATION OF STARTER   |  | <b>ROAD TEST INSPECTION</b>   |  |
| MAKE ELECTRICAL STARTER TEST   |  | MAKE ODOMETER ACCURACY TEST   |  |
| <b>CHARGING SYSTEM TEST</b>  |  | CHECK STEERING FEEL   |  |
| CHECK MAXIMUM ALTERNATOR OUTPUT  |  | CHECK SHIFTING EASE   |  |
| CHECK MAXIMUM CHARGING VOLTAGE   |  | CHECK BRAKE FEEL  |  |
| <b>AIR CLEANER SERVICE</b>   |  | CHECK ENGINE OPERATION  |  |
| DRY TYPE   |  | CHECK CAB AND DOOR RATTLES  |  |
| a. RECORD AIR RESTRICTION  |  | CHECK CAB HEATER  |  |
| b. IF RESTRICTION EXCEEDS 18" H <sub>2</sub> O, CHANGE ELEMENT                 |  | CHECK CAB AIR CONDITIONER   |  |
| <b>OIL BATH</b>  |  |   |  |
| a. REMOVE COMPLETE AIR CLEANER—Soak in Solvent                                 |  |   |  |
| b. FILL PAN TO PROPER LEVEL  |  |   |  |
| c. CHECK PAN GASKET  |  |   |  |
| CHECK AIR INTAKE PIPES & CONNECTIONS   |  |   |  |

DRIVER'S EXPLANATION:

DRIVER

GARAGE'S REMARKS:

MKIL40474

SIGNED

Garage Supervisor

MK094884

MKIL189475

PREVENTIVE MAINTENANCE

Gasoline Powered Units

Service Schedule

- A. Service every 4,000 miles
- B. Service every 12,000 miles
- C. Service every 48,000 miles

(Oil change every 4,000 miles)

Estimated Labor Cost

- A. Service inspection 3-5 hours
- B. Service inspection 7-9 hours
- C. Service inspection 14-16 hours

| <u>Miles</u> | <u>PM</u> | <u>Oil Change</u> | <u>Miles</u> | <u>PM</u> | <u>Oil Change</u> |
|--------------|-----------|-------------------|--------------|-----------|-------------------|
| 4,000        | A         | Yes               | 28,000       | A         | Yes               |
| 8,000        | A         | Yes               | 32,000       | A         | Yes               |
| 12,000       | B         | Yes               | 36,000       | B         | Yes               |
| 16,000       | A         | Yes               | 40,000       | A         | Yes               |
| 20,000       | A         | Yes               | 44,000       | A         | Yes               |
| 24,000       | B         | Yes               | 48,000       | C         | Yes               |

USE ALL MANUFACTURERS' RECOMMENDED

OIL - LUBE - ADJUSTMENTS

**MKIL40475**

MK094885

MKIL189476

## Gasoline

## GASOLINE POWERED STRAIGHT TRUCKS AND TRACTORS PREVENTIVE MAINTENANCE INSPECTION

# A

TRUCK NO. \_\_\_\_\_ DATE \_\_\_\_\_

|               |                |
|---------------|----------------|
| MILEAGE _____ | LOCATION _____ |
|---------------|----------------|

MILES SINCE LAST P.M. \_\_\_\_\_

INSPECTION CODE:    ✓ = OK            0 = FOLLOW-UP NEEDED            X = ADJUSTMENT MADE

[illegible]

ITEMS NOT LISTED ON THIS FORM BUT FOUND TO BE IN NEED  
OF ATTENTION ARE TO BE NOTED ON REVERSE SIDE

ROAD TEST \_\_\_\_\_

CORRECT P.M. INSP. STICKER \_\_\_\_\_

P.M. PERFORMED BY



Foremost-McKesson, Inc.

**MKIL40476**

PK1094886

MKIL189477

Page 2 of 2

## "A" PREVENTIVE MAINTENANCE

X = ADJUSTMENT MADE

[illegible]

**MKIL40477**

PK094887

MKIL189478



CHEM OP 30.40 Exhibit 2b

9/15/85

9/15/85

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**"B" PREVENTIVE MAINTENANCE**

INSPECTION CODE: ✓ = OK    O = FOLLOW-UP NEEDED    X = ADJUSTMENT MADE

|   |  |  |                                   |  |  |
|---|--|--|-----------------------------------|--|--|
| <b>LUBRICATION</b>                          |  |  | <b>CRANKING SYSTEM INSPECTION</b> |  |  |
| LUBRICATE CHASSIS AND ACCESSORIES           |  |  | MAKE VISUAL INSPECTION OF STARTER |  |  |
| REFER TO CHART                              |  |  | CHECK OPERATION OF STARTER        |  |  |
| LUBRICATE DOOR LATCHES AND HINGES           |  |  | MAKE ELECTRICAL STARTER TEST      |  |  |
| CHECK ALL LUBRICANT LEVELS                  |  |  | RECORD AMPERAGE DRAW              |  |  |
| a. STEERING BOX                             |  |  | <b>CHARGING SYSTEM TEST</b>       |  |  |
| b. TRANSMISSION                             |  |  | CHECK MAXIMUM ALTERNATOR OUTPUT   |  |  |
| c. DIFFERENTIAL                             |  |  | CHECK VOLTAGE REGULATOR SETTING   |  |  |
| d. TWO SPEED MOTOR                          |  |  | <b>ROAD TEST INSPECTION</b>       |  |  |
| CHANGE ENGINE OIL AND FILTER                |  |  | CHECK STEERING FEEL               |  |  |
| CHANGE FUEL FILTER                          |  |  | CHECK SHIFTING EASE               |  |  |
| SERVICE PERRY WATER FILTER                  |  |  | CHECK BRAKE FEEL                  |  |  |
| <b>AIR CLEANER SERVICE</b>                  |  |  | CHECK ENGINE OPERATION            |  |  |
| OIL BATH                                    |  |  | CHECK CAB AND DOOR RATTLES        |  |  |
| CLEAN AND REFILL TO PROPER OIL LEVEL        |  |  | CHECK CAB HEATER                  |  |  |
| CHECK MOUNTING GASKETS AND SEALS            |  |  | CHECK CAB AIR-CONDITIONER         |  |  |
| DRY TYPE                                    |  |  | <b>DRIVER EXPLANATION</b>         |  |  |
| CHECK AIR RESTRICTION - OR -                |  |  |                                   |  |  |
| CLEAN AND EXAMINE ELEMENT -                 |  |  |                                   |  |  |
| REPLACE IF NECESSARY                        |  |  |                                   |  |  |
| CHECK MOUNTING GASKETS AND SEALS            |  |  |                                   |  |  |
| <b>REAR BRAKE LINING INSPECTION "S CAM"</b> |  |  |                                   |  |  |
| REMOVE LOWER DUST SHIELD                    |  |  |                                   |  |  |
| RECORD DRUM CONDITION                       |  |  |                                   |  |  |
| RECORD REMAINING LINING %                   |  |  |                                   |  |  |
| <b>REAR BRAKE LINING INSPECTION "WEDGE"</b> |  |  |                                   |  |  |
| INSPECT LINING THICKNESS THRU               |  |  |                                   |  |  |
| INSPECTION HOLES IN DUST SHIELDS            |  |  |                                   |  |  |
| RECORD REMAINING LINING %                   |  |  |                                   |  |  |
| <b>ENGINE SERVICE</b>                       |  |  |                                   |  |  |
| LISTEN FOR UNUSUAL ENGINE NOISES OR MISSING |  |  |                                   |  |  |
| MAKE CYLINDER BALANCE TEST                  |  |  |                                   |  |  |
| ADJUST TAPPETS (MECHANICAL LIFTERS ONLY)    |  |  |                                   |  |  |
| REMOVE SPARK PLUGS, INSPECT CONDITION       |  |  |                                   |  |  |
| & REPLACE WITH PROPER HEAT RANGE            |  |  |                                   |  |  |
| CHECK EXHAUST CONTROL VALVE                 |  |  |                                   |  |  |
| CLEAN AND TEST CRANKCASE EMISSION SYSTEM    |  |  |                                   |  |  |
| (ALWAYS REPLACE P.C.V. VALVE)               |  |  |                                   |  |  |
| <b>IGNITION</b>                             |  |  | <b>GARAGE'S REMARKS</b>           |  |  |
| VISUAL INSPECTION OF WIRES, CAP, ROTOR      |  |  |                                   |  |  |
| AND POINTS                                  |  |  |                                   |  |  |
| CHECK POINT RESISTANCE                      |  |  |                                   |  |  |
| CHECK CAM ANGLE                             |  |  |                                   |  |  |
| SET INITIAL TIMING - VACUUM LINE REMOVED    |  |  |                                   |  |  |
| CHECK CENTRIFUGAL AND VACUUM ADVANCE        |  |  |                                   |  |  |
| DETERMINE SECONDARY IGNITION PERFORMANCE    |  |  |                                   |  |  |
| BY USING SCOPE OR VOLTS IGNITION TESTER     |  |  |                                   |  |  |
| <b>CARBURETION</b>                          |  |  |                                   |  |  |
| CHECK OPERATION OF CHOKE                    |  |  |                                   |  |  |
| ADJUST CARBURETOR IDLE SPEED & MIXTURE      |  |  |                                   |  |  |
| CHECK GOVERNOR SEALS AND LINES              |  |  |                                   |  |  |
| RECORD ENGINE (GOVERNED) RPM                |  |  |                                   |  |  |

MKIL40479

MK094889

MKIL189480

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**McKESSON  
CHEMICAL**

C

TRUCK NO. \_\_\_\_\_ DATE \_\_\_\_\_

MILEAGE \_\_\_\_\_ LOCATION \_\_\_\_\_

MILES SINCE LAST P.M. \_\_\_\_\_

INSPECTION CODE:    ☒ = OK                      O = FOLLOW-UP NEEDED                      X = ADJUSTMENT MADE

ITEMS NOT LISTED ON THIS FORM BUT FOUND TO BE IN NEED  
OF ATTENTION ARE TO BE NOTED ON REVERSE SIDE

CORRECT P.M. INSP. STICKER \_\_\_\_\_

P.M. PERFORMED BY \_\_\_\_\_

**MKIL40480**

**FOREMOST** Foremost-McKesson, Inc.

MK094890

MKIL189481

Exhibit 2c

9/15/85

9/15/85"C" PREVENTIVE MAINTENANCE INSPECTION

Page 2 of 2

INSPECTION CODE:

✓ - OK

**O = FOLLOWUP NEEDED**

X - ADJUSTMENT MADE

| LUBRICATION                                  |  | CARBURETION                            |  |
|--|--|--|--|
| LUBRICATE CHASSIS AND ACCESSORIES            |  | CHECK OPERATION OF CHOKE               |  |
| REFER TO CHART                               |  | ADJUST CARBURETOR IDLE SPEED & MIXTURE |  |
| LUBRICATE DOOR LATCHES AND HINGES            |  | CHECK GOVERNOR SEALS AND LINES         |  |
| CHECK ALL LUBRICANT LEVELS                   |  | RECORD ENGINE (GOVERNED) RPM           |  |
| a. STEERING BOX                              |  | <b>CRANKING SYSTEM INSPECTION</b>      |  |
| b. CHANGE TRANSMISSION LUBE                  |  | MAKE VISUAL INSPECTION OF STARTER      |  |
| c. CHANGE DIFFERENTIAL LUBE                  |  | CHECK OPERATION OF STARTER             |  |
| d. TWO SPEED MOTOR                           |  | MAKE ELECTRICAL STARTER TEST           |  |
| CHANGE ENGINE OIL AND FILTER                 |  | RECORD AMPERAGE DRAW                   |  |
| CHANGE FUEL FILTER                           |  | (REMOVE AND OVERHAUL IF MILES ON       |  |
| SERVICE WATER FILTER                         |  | STARTER EXCEED 48,000 MILES)           |  |
| <b>AIR CLEANER SERVICE</b>                   |  | <b>CHARGING SYSTEM TEST</b>            |  |
| OIL BATH                                     |  | CHECK MAXIMUM ALTERNATOR OUTPUT        |  |
| CLEAN AND REFILL TO PROPER OIL LEVEL         |  | CHECK VOLTAGE REGULATOR SETTING        |  |
| CHECK MOUNTING GASKETS AND SEALS             |  | (REMOVE AND OVERHAUL IF MILES ON       |  |
| DRY TYPE                                     |  | ALTERNATOR EXCEED 48,000 MILES)        |  |
| CHECK AIR RESTRICTION - OR -                 |  | <b>ALIGNMENT CHECK</b>                 |  |
| CLEAN AND EXAMINE ELEMENT -                  |  | CHECK TOE-IN WITH GAUGE                |  |
| REPLACE IF NECESSARY                         |  | CHECK TANDEM SPACING WITH TODCO GAUGE  |  |
| CHECK MOUNTING GASKETS AND SEALS             |  | <b>ROAD TEST INSPECTION</b>            |  |
| <b>FRONT WHEEL PULL</b>                      |  | MAKE ODOMETER ACCURACY TEST            |  |
| REMOVE, CLEAN, INSPECT & LUBRICATE EVERY "C" |  | CHECK STEERING FEEL                    |  |
| <b>REAR WHEEL PULL (PACKED TYPE)</b>         |  | CHECK SHIFTING EASE                    |  |
| REMOVE, CLEAN, INSPECT AND REPACK EVERY "C"  |  | CHECK BRAKE FEEL                       |  |
| <b>REAR WHEEL PULL (RUNNING IN OIL)</b>      |  | CHECK ENGINE OPERATION                 |  |
| REMOVE ONLY IF BRAKE WORK IS NECESSARY       |  | CHECK CAB AND DOOR RATTLES             |  |
| OR IF WHEEL BEARINGS ARE LOOSE OR NOISY      |  | CHECK CAB HEATER                       |  |
| REMOVE LOWER DUST SHIELD                     |  | CHECK CAB AIR-CONDITIONER              |  |
| RECORD DRUM CONDITION                        |  |  |  |
| RECORD REMAINING LINING %                    |  |  |  |
| <b>ENGINE SERVICE</b>                        |  |  |  |
| LISTEN FOR UNUSUAL ENGINE NOISES OR MISSING  |  | <b>REMARKS</b>                         |  |
| MAKE CYLINDER BALANCE TEST                   |  |  |  |
| ADJUST TAPPETS (MECHANICAL LIFTERS ONLY)     |  |  |  |
| REMOVE SPARK PLUGS, INSPECT CONDITION AND    |  |  |  |
| REPLACE WITH PROPER HEAT RANGE               |  |  |  |
| CHECK EXHAUST CONTROL VALVE                  |  |  |  |
| CLEAN AND TEST CRANKCASE EMISSION SYSTEM     |  |  |  |
| (ALWAYS REPLACE P.C.V. VALVE)                |  |  |  |
| CHECK OPERATION OF AIR INJECTION SYSTEM      |  |  |  |
| (If so equipped)                             |  |  |  |
| <b>IGNITION</b>                              |  |  |  |
| VISUAL INSPECTION: WIRES, CAP & ROTOR        |  |  |  |
| REMOVE DISTRIBUTOR AND OVERHAUL. USE         |  |  |  |
| SYNCOGRAPH TO SET CAM ANGLE, CENTRIFUGAL     |  |  |  |
| & VACUUM ADVANCE TO MFG.'S SPECIFICATIONS    |  |  |  |
| SET INITIAL TIMING - VACUUM LINE REMOVED     |  |  |  |
| CHECK VACUUM ADVANCE OPERATION               |  |  |  |
| DETERMINE SECONDARY IGNITION PERFORMANCE     |  |  |  |
| BY USING SCOPE                               |  |  |  |

PK094891

MKIL189482

PREVENTIVE MAINTENANCE

Trailer Equipment

Service Schedule

- A. Inspection monthly
- B. Inspection every three months

Estimated Labor Cost

- A. Inspection 1-3 hours
- B. Inspection 2-5 hours

USE ALL MANUFACTURERS' RECOMMENDED

OIL - LUBE - ADJUSTMENTS

MKIL40482

MK094892

MKIL189483



**McKESSON  
CHEMICAL**

CHEM OP 30.40 Exhibit 3a  
9/15/85 9/15/85  
Page 1 of 2

### TRAILER PREVENTIVE MAINTENANCE

TRAILER NO. \_\_\_\_\_ DATE \_\_\_\_\_  
HUBOMETER READING \_\_\_\_\_ LOCATION \_\_\_\_\_  
DATE OF LAST P.M. \_\_\_\_\_

#### "D" INSPECTION - EVERY MONTH

| TIRES, WHEELS AND BRAKES        |  | LIGHTS AND WIRING                     |  |
|---------------------------------|--|---------------------------------------|--|
| CHECK TIRE INFLATION AND RECORD |  | CHECK ALL LIGHTS                      |  |
| MEASURE TREAD DEPTH AND RECORD  |  | CHECK ALL REFLECTORS                  |  |
| CHECK LUG BOLTS                 |  | TRAILER BODY                          |  |
| CHECK SPARE TIRE AND CARRIER    |  | INSPECT FOR SHEET METAL DAMAGE        |  |
| CHECK BRAKE ADJUSTMENT          |  | INSPECT CONDITION OF FLOOR AND LINING |  |
| LUBRICATION                     |  | CHECK MUD FLAPS                       |  |
| CHECK OIL LEVEL IN WHEELS       |  |                                       |  |
| LUBRICATE CHASSIS               |  |                                       |  |

#### "E" INSPECTION - EVERY THREE MONTHS

| TIRE AND WHEEL INSPECTION  |  | LIGHTS AND WIRING  |  |
|--|--|--|--|
| CHECK REMAINING TREAD  |  | CHECK ALL LIGHTS   |  |
| CHECK TIRES FOR CORRECT AIR PRESSURE   |  | CHECK ALL REFLECTORS   |  |
| CHECK WHEELS FOR CRACKS OR LOOSE LUGS  |  | CHECK FOR LOOSE WIRING OR DAMAGED LIGHT CORD SOCKET  |  |
| REAR BRAKE LINING INSPECTION "S CAM"   |  | TRAILER BODY   |  |
| REMOVE LOWER DUST SHIELD   |  | INSPECT FOR SHEET METAL DAMAGE, DENTS, HOLES AND PAINT   |  |
| RECORD DRUM CONDITION  |  | CHECK DOORS, LINING, LATCHES, HINGES AND HOLD BACKS  |  |
| RECORD REMAINING LINING %  |  | CHECK OPERATION OF OVERHEAD DOORS  |  |
| CHECK BRAKE ADJUSTMENT   |  | CHECK CONDITION OF FLOOR   |  |
| REAR BRAKE LINING INSPECTION "WEDGE"   |  | CHECK INSIDE LINING, ROOF AND BOWS   |  |
| INSPECT LINING THICKNESS THRU INSPECTION HOLES IN DUST SHIELDS                 |  | LIGHT TEST FOR HOLES-ROOF, AROUND DOORS-INSPECTING FROM INSIDE WITH DOORS CLOSED   |  |
| RECORD REMAINING LINING %  |  | LANDING GEAR AND KING PIN  |  |
| WHEELS (PACKED TYPE)   |  | CHECK LEG BRACES AND SUPPORTS  |  |
| REMOVE, CLEAN, INSPECT & REPACK EVERY "E"                                      |  | CHECK CRANK HANDLE AND RETAINING CLIP  |  |
| WHEELS (RUNNING IN OIL)  |  | FILL GEAR BOX TO LEVEL WITH LUBRICANT  |  |
| REMOVE ONLY IF BRAKE WORK IS NECESSARY OR IF WHEEL BEARINGS ARE LOOSE OR NOISY |  | INSPECT KING PIN AND UPPER 5th WHEEL PLATE   |  |
| LUBRICATION  |  | AXLE ALIGNMENT   |  |
| CHECK OIL LEVELS IN WHEELS   |  | USE SPECIFIED ALIGNING TOOLS AND CHECK ALIGNMENT OF FRONT AXLE TO KING PIN. REAR AXLE ON TANDEM UNITS MUST BE ALIGNED TO FRONT AXLE. RECORD MEASUREMENTS ON DIAGRAM ON BACK SIDE, THIS FORM. |  |
| LUBRICATE CHASSIS  |  | REMARKS  |  |
| RUNNING GEAR   |  |  |  |
| CHECK BRAKE CHAMBERS, TRAILER VALVE AND LINES FOR AIR LEAKS                    |  |  |  |
| CHECK ALL AIR HOSES AND LINES FOR CHAFING                                      |  |  |  |
| CHECK TRAILER RELAY VALVE EMERGENCY OPERATION, DRAIN AIR TANK.                 |  |  |  |
| CHECK SPRINGS AND U BOLTS  |  |  |  |
| CHECK CROSS MEMBERS & UNDER STRUCTURE  |  |  |  |
| CHECK SPARE TIRE CARRIER   |  |  |  |
| CHECK OPERATION OF SLIDING TANDEM LATCHING MECHANISM                           |  |  |  |
| CHECK MUD FLAPS  |  |  |  |

INSPECTION CODE: ✓ = OK      O = NEEDS REPAIR  
X = ADJUSTMENT MADE

CORRECT P.M. INSP. STICKER \_\_\_\_\_

P.M. PERFORMED BY \_\_\_\_\_

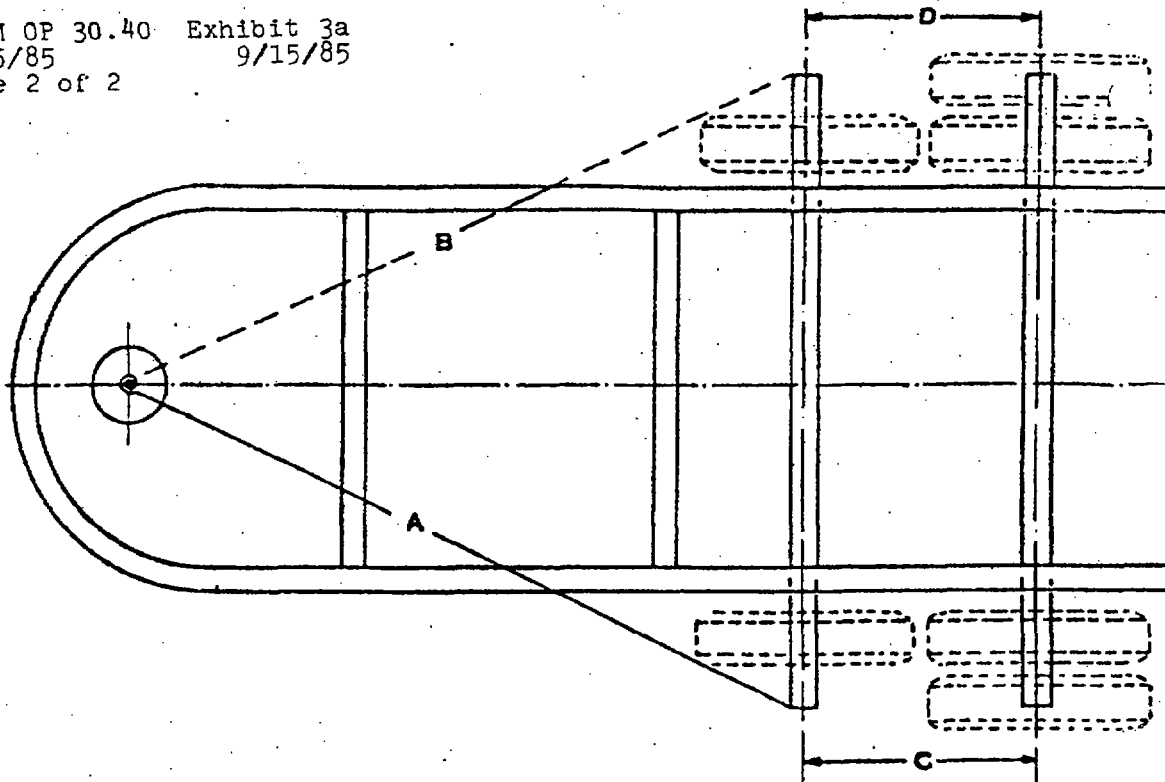
**MKIL40483**

Foremost-McKesson, Inc.



MK094893

MKIL189484



|                 | BEFORE ADJUSTMENT<br>BEFORE ADJUSTMENT | AFTER ADJUSTMENT |
|-----------------|--|------------------|
| A - MEASUREMENT |  |                  |
| B - MEASUREMENT |  |                  |
| C - MEASUREMENT |  |                  |
| D - MEASUREMENT |  |                  |

| FRONT AXLE | REAR AXLE |
|------------|-----------|
| 32nds lbs  | 32nds lbs |
|            |           |
| 32nds lbs  | 32nds lbs |
|            |           |

THE ABOVE TIRE PRINTS ARE TO BE USED TO RECORD  
 EXISTING TREAD DEPTHS AND AIR PRESSURES

MKIL40484

MK094894

**McKesson**  
**Operations**

| Section            | Reference  | Page           | End |
|--------------------|------------|----------------|-----|
| TRANSPORTATION     | 30.50      | 1              | X   |
| Subject            | Issue Date | Effective Date |     |
| DRIVER'S DAILY LOG | 9/15/85    | 9/15/85        |     |

**GENERAL**

When drivers are required to complete daily log books, the following information must appear on each log.

1. Month, date, and year
2. Total miles traveled
3. Identification of vehicle number (tractor and trailer)
4. Name of driver
5. Principal place of business (McKesson Chemical, Regional office address)
6. Home terminal (your Service Center address)
7. Off duty time
8. Sleeper berth time (if any)
9. Driving time (any time period behind the wheel over fifteen minutes)
10. On duty not driving (all time spent other than driving)
11. Total hours equaling 24
12. An invoice number for each delivery
13. A quarter hour entry at the beginning of each trip showing pre-trip inspection
14. A town and state entry for each stop
15. Tire inspection entry (every two hours or every 100 miles, whichever comes first and each time the vehicle is stopped)
16. Completion of recap section of the log (60 hours, 7 days)
17. Completion of log summary sheet on the back cover of the log book
18. Starting point and return point
19. Entry for vehicle condition report
20. Completion of vehicle condition report itself

Each of these entries is identified on Exhibit 1 with its corresponding number.

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(NOTE: Lined border indicates form dimensions only and is not part of the original form.)

| MONTHLY LOG SUMMARY SHEET   |                    |                                 |  |                                 |                                    |                    |                                 |  |                                 |
|---|--------------------|---------------------------------|--|---------------------------------|------------------------------------|--------------------|---------------------------------|--|---------------------------------|
| Month _____   |                    |                                 |  |                                 |                                    |                    |                                 |  |                                 |
| <p>If you operate on the period of 70 hours in 8 days, use the summary sheet on the left;<br/>         if you operate on the period of 60 hours in 7 days, use the summary sheet to the right.</p> <p>The figures 1 to 31 represent calendar days, and entries should be made for each day - even when driver does not work. If no work is performed, enter zero(0) in first column and compute other columns as explained below.</p> |                    |                                 |  |                                 |                                    |                    |                                 |  |                                 |
| 70 HOURS IN 8 DAYS<br>DRIVERS ONLY  |                    |                                 |  |                                 | 60 HOURS IN 7 DAYS<br>DRIVERS ONLY |                    |                                 |  |                                 |
| DAY OF MO   | HOURS WORKED TODAY | TOTAL HOURS ON DUTY LAST 7 DAYS | TOTAL HOURS AVAILABLE TO CORRECT (70 HOURS MINUS COL. A) | TOTAL HOURS ON DUTY LAST 8 DAYS | DAY OF MO                          | HOURS WORKED TODAY | TOTAL HOURS ON DUTY LAST 6 DAYS | TOTAL HOURS AVAILABLE TO CORRECT (60 HOURS MINUS COL. A) | TOTAL HOURS ON DUTY LAST 7 DAYS |
| 1   |                    |                                 |  |                                 | 1                                  |                    |                                 |  |                                 |
| 2   |                    |                                 |  |                                 | 2                                  |                    |                                 |  |                                 |
| 3   |                    |                                 |  |                                 | 3                                  |                    |                                 |  |                                 |
| 4   |                    |                                 |  |                                 | 4                                  |                    |                                 |  |                                 |
| 5   |                    |                                 |  |                                 | 5                                  |                    |                                 |  |                                 |
| 6   |                    |                                 |  |                                 | 6                                  |                    |                                 |  |                                 |
| 7   |                    |                                 |  |                                 | 7                                  |                    |                                 |  |                                 |
| 8   |                    |                                 |  |                                 | 8                                  |                    |                                 |  |                                 |
| 9   |                    |                                 |  |                                 | 9                                  |                    |                                 |  |                                 |
| 10  |                    |                                 |  |                                 | 10                                 |                    |                                 |  |                                 |
| 11  |                    |                                 |  |                                 | 11                                 |                    |                                 |  |                                 |
| 12  |                    |                                 |  |                                 | 12                                 |                    |                                 |  |                                 |
| 13  |                    |                                 |  |                                 | 13                                 |                    |                                 |  |                                 |
| 14  |                    |                                 |  |                                 | 14                                 |                    |                                 |  |                                 |
| 15  |                    |                                 |  |                                 | 15                                 |                    |                                 |  |                                 |
| 16  |                    |                                 |  |                                 | 16                                 |                    |                                 |  |                                 |
| 17  |                    |                                 |  |                                 | 17                                 |                    |                                 |  |                                 |
| 18  |                    |                                 |  |                                 | 18                                 |                    |                                 |  |                                 |
| 19  |                    |                                 |  |                                 | 19                                 |                    |                                 |  |                                 |
| 20  |                    |                                 |  |                                 | 20                                 |                    |                                 |  |                                 |
| 21  |                    |                                 |  |                                 | 21                                 |                    |                                 |  |                                 |
| 22  |                    |                                 |  |                                 | 22                                 |                    |                                 |  |                                 |
| 23  |                    |                                 |  |                                 | 23                                 |                    |                                 |  |                                 |
| 24  |                    |                                 |  |                                 | 24                                 |                    |                                 |  |                                 |
| 25  |                    |                                 |  |                                 | 25                                 |                    |                                 |  |                                 |
| 26  |                    |                                 |  |                                 | 26                                 |                    |                                 |  |                                 |
| 27  |                    |                                 |  |                                 | 27                                 |                    |                                 |  |                                 |
| 28  |                    |                                 |  |                                 | 28                                 |                    |                                 |  |                                 |
| 29  |                    |                                 |  |                                 | 29                                 |                    |                                 |  |                                 |
| 30  |                    |                                 |  |                                 | 30                                 |                    |                                 |  |                                 |
| 31  |                    |                                 |  |                                 | 31                                 |                    |                                 |  |                                 |

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**McKesson**  
**Operations**

| Section  | Reference  | Page           | End |
|--|------------|----------------|-----|
| TRANSPORTATION   | 30.55      | 1              |     |
| Subject  | Issue Date | Effective Date |     |
| U.S. DEPARTMENT OF TRANSPORTATION (DOT)<br>HAZARDOUS MATERIALS REGULATIONS | 9/15/85    | 9/15/85        |     |

**GENERAL**

Nine printings from DOT follow. Some of this information may appear elsewhere in this manual, in your Regional procedures guide, or on wall charts you may have. However, proper compliance with DOT Hazardous Materials Regulations is imperative and cannot be overstated. These printings are designed to offer clarification and assistance to shipping supervisors.

These printings do not contain or refer to all of the DOT requirements for shipping hazardous materials. For specific details refer to Code of Federal Regulations (CFR) Title 49, Parts 100-199.

- Exhibit 1     DOT Hazardous Materials Warning Labels - Note the general guidelines on use of labels on the back page of this chart.
- Exhibit 2     Indicators of Hazardous Materials Shipment Violations - As a shipper, you are responsible. Please be reminded that on inter-branch or repack items, it is your responsibility that these guides be observed even if they have been repacked or shipped to you incorrectly. **THE SHIPPER IS RESPONSIBLE.**
- Exhibit 3     Guide for Shippers - This offers a step-by-step aid to compliance.
- Exhibit 4     Guide for Markings
- Exhibit 5     Guide for Carriers
- Exhibit 6     Sources of Warning Labels and Placards
- Exhibit 7     Guide for Reuse of Packaging Containers
- Exhibit 8     Hazardous Materials Definitions
- Exhibit 9     Guide for H/M Shipping Papers

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**McKesson**  
Operations

| Section  | Reference  | Page           | End |
|--|------------|----------------|-----|
| TRANSPORTATION   | 30.55      | 2              | X   |
| Subject  | Issue Date | Effective Date |     |
| U.S. DEPARTMENT OF TRANSPORTATION (DOT)<br>HAZARDOUS MATERIALS REGULATIONS | 9/15/85    | 9/15/85        |     |

DOT  
INFORMATION  
NUMBER

The Department of Transportation has a telephone number whereby truck drivers, operators of trucking companies, and the general public can obtain information on federal motor carrier safety and on hazardous materials regulations. Callers also can request applicable publications and can get information on the functions and responsibilities of the Bureau of Motor Carrier Safety. This service is available Monday through Friday from 7:30 a.m. until 4:00 p.m. EDT.

1. Motor Carrier Regulations - (202) 426-1724
2. Hazardous Materials Regulations - (202) 426-2075

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# Hazardous Materials Warning Labels

| DOMESTIC LABELING |  |  |  |  | CHEM OF 30.55 Exhibit 1<br>9/15/85 9/15/85 |  |  |
|-------------------|--|--|--|--|--|--|--|
|                   |  |  |  |  |  |  |  |
|                   |  |  |  |  |  |  |  |
|                   |  |  |  |  |  |  |  |
|                   |  |  |  |  | Handling Labels                            |  |  |

## General Guidelines on Use of Labels

- Labels illustrated above are normally for domestic shipments. However, some air carriers may require the use of International Civil Aviation Organization (ICAO) labels.
- Domestic Warning Labels may display UN Class Number, Division Number and Compatibility Group for Explosives only (Sec. 172.407(g)).
- Any person who offers a hazardous material for transportation MUST label the package if required (Sec. 172.400(a)).
- The Hazardous Materials Tables, Sec. 172.101 and 172.102 identify the proper label(s) for the hazardous materials listed.
- Label(s) when required, must be printed on or affixed to the surface of the package near the proper shipping name (Sec. 172.406(a)).
- When two or more different labels are required, display them next to each other (Sec. 172.406(c)).
- Labels may be affixed to packages (even when not required by regulations) provided each label represents a hazard of the material in the package (Sec. 172.401).

## UN Class Numbers

Hazardous materials class numbers associated with the hazard classes

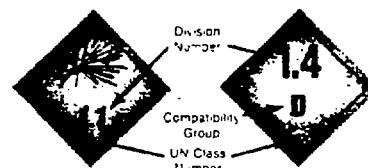
- Class 1—Explosives
- Class 2—Gases (Compressed, Liquefied or dissolved under pressure)
- Class 3—Flammable liquids
- Class 4—Flammable solids or Substances
- Class 5—Oxidizing Substances
- Class 6—Poisonous and Infectious Substances
- Class 7—Radioactive Substances
- Class 8—Corrosives
- Class 9—Miscellaneous dangerous Substances

## INTERNATIONAL LABELING



### EXAMPLES OF INTERNATIONAL LABELS

- These are examples of International Labels not presently used for domestic shipments.
- Text, when used internationally may be in the language of the country of origin.
- Most of the domestic labels (illustrated above) may be used internationally.
- Text is mandatory on Radioactive Material, St Andrews Cross \* and Infectious Substance labels.



### EXAMPLES OF EXPLOSIVE LABELS

- The NUMERICAL DESIGNATION represents the CLASS or DIVISION.
- ALPHABETICAL DESIGNATION represents the COMPATIBILITY GROUP (for Explosives Only).
- DIVISION NUMBERS and COMPATIBILITY GROUP combinations can result in over 30 different "Explosives" labels (see IMDG Code/ICAO).

For complete details refer to one or more of the following:

- Code of Federal Regulations, Title 49, Transportation, Parts 100-199 [All Modes]
- International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air [Air]
- International Maritime Organization (IMO) Dangerous Goods Code [Water]
- Canadian Transport Commission (CTC) Regulations [Rail]



U.S. Department of Transportation  
Research and Special Programs  
Administration

Materials Transportation Bureau  
Washington, D.C. 20590

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CHART 8  
JANUARY 1985

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# Hazardous Materials Warning Placards

| DOMESTIC PLACARDING   |        |        |        |  |        |        |
|---|--------|--------|--------|--|--------|--------|
| Illustration numbers in each square (1 through 18) refer to TABLES 1 and 2 below. |        |        |        |  |        |        |
| 1<br>   | 2<br>  | 3<br>  | 4<br>  | 5<br>  | 6<br>  | 7<br>  |
| 8<br>   | 9<br>  | 10<br> | 11<br> | 12<br>   | 13<br> | 14<br> |
| 15<br>  | 16<br> | 17<br> | 18<br> | <b>HIGHWAY</b><br>• For HIGHWAY ROUTE CONTROLLED QUANTITY OF RADIOACTIVE MATERIALS [Sec. 172.507]<br>• For use of the words "GASOLINE" and "FUEL OIL" on placards [Sec. 172.542(c) or 172.544(c)]<br><b>RAIL</b><br>• For use of EXPLOSIVE A, POISON GAS AND POISON GAS-EMPTY placards [Sec. 172.510(a)] |        |        |

| TABLE 1  | Guidelines   | TABLE 2   |
|--|--|---|
| <b>HAZARD CLASSES</b><br>Class A explosives<br>Class B explosives<br>Poison A<br>Flammable solid (DANGEROUS - WHEN WET label only)<br>Radioactive material (YELLOW III label)<br>Radioactive material:<br>Uranium hexafluoride fissile (containing more than 10% U <sup>235</sup> )<br>Uranium hexafluoride low-specific activity (containing 10% or less U <sup>235</sup> )<br><b>NOTE:</b> For details on the use of Tables 1 and 2 see Sec. 172.504 (See footnotes at bottom of tables) | <b>Guidelines</b><br>• Placard motor vehicles, freight containers, and rail cars containing any quantity of hazardous materials listed in TABLE 1<br>• Placard motor vehicles and freight containers containing 1,000 pounds or more gross weight of hazardous materials classes listed in TABLE 2<br>• Placard freight containers 640 cubic feet or more containing any quantity of hazardous material classes listed in TABLES 1 and/or 2 when offered for transportation by air or water. Under 640 cubic feet, see Sec. 172.512(b).<br>• Placard rail cars containing any quantity of hazardous materials classes listed in TABLE 2 except when less than 1,000 pounds gross weight of hazardous materials are transported in Trailers or Containers on Flat Car Service | <b>HAZARD CLASSES</b><br>Class C explosives<br>Blasting agent<br>Nonflammable gas<br>Nonflammable gas (Chlorine)<br>Nonflammable gas (Fluorine)<br>Nonflammable gas (Oxygen, cryogenic liquid)<br>Flammable gas<br>Combustible liquid<br>Flammable liquid<br>Flammable solid<br>Oxidizer<br>Organic peroxide<br>Poison B<br>Corrosive material<br>Irritating material |

| INTERNATIONAL PLACARDING   |   |   |
|--|---|---|
| • Most international placards are identical (color and pictorial symbols) to the Domestic placards illustrated above<br>• International placards are enlarged ICAO or IMO labels (See International Labeling—Outside)<br>• Placard MUST correspond to hazard class of material | • Placard ANY QUANTITY of hazardous materials when loaded in FREIGHT CONTAINERS, PORTABLE TANKS, RAIL CARS AND HIGHWAY VEHICLES<br>• International placards may be used in addition to DOT placards for international shipments | When required, Subsidiary Risk placards must be displayed in the same manner as Primary Risk placards. Class numbers are not shown on Subsidiary Risk placards.<br>• COMPATIBILITY GROUP DESIGNATORS must be displayed on EXPLOSIVES PLACARDS<br>• UN CLASS NUMBERS and DIVISION NUMBERS MUST be displayed on hazard class placards when required |

| UN and NA Identification Numbers  |  |  |
|---|--|--|
| • The four digit UN or NA numbers must be displayed on all hazardous materials packages<br>• UN (United Nations) or NA (North American) numbers are found in the Hazardous Materials Tables, Sec. 172.101 and the Optional Hazardous Materials Tables, Sec. 172.102 (CFR, Title 49, Parts 100-199)<br>• UN numbers are displayed in the same manner for both Domestic and International shipments<br>• NA numbers are used only in the USA and Canada | When hazardous materials are transported in Tank Cars, Cargo Tanks and Portable Tanks, UN or NA numbers must be displayed on<br><b>PLACARDS OR ORANGE PANELS</b><br><br>Appropriate Placard must be used | <b>EUROPEAN NUMBERING SYSTEM—</b><br><b>Top Number—Hazard Index (Identification of Danger)</b><br>2 or 3 figures. Example: 33 highly inflammable liquid<br><br><b>Bottom Number—UN Number of Substance</b><br>Example: 0881 ACETAL<br>For more complete details on identification numbers see Sec. 172.300 through 172.338 |

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US Department  
of Transportation  
Research and  
Special Programs  
Administration

CHEM OP 30.55 Exhibit 2  
9/15/85 9/15/85

## Indicators of Hazardous Materials Shipment Violations

This is a partial list of things which you as a shipper, container manufacturer, or carrier may use to spot check your compliance with the DOT Hazardous Materials Regulations. As stated in the title, these are indicators of violations and not necessarily violations in and of themselves.

The hazardous materials regulations for shippers are organized in Parts 171, 172, 173, 178 and 179 in the Code of Federal Regulations (CFR), Title 49, Parts 100-199, as communication regulations and general requirements. When a compliance inspection is made, documentation, marking, labeling and packaging are observed for discrepancies. With this list as a guide, you may spot check your own documentation, marking, labeling and packaging for compliance. When using this information, remember this is intended to be used as an aid and does not cover all aspects of the regulations.

### I. CLASSIFICATION AND PROPER SHIPPING NAME

- A. Improper classification of hazardous materials.
- B. Failure to properly classify material having more than one hazard.
- C. Improper description and/or proper shipping name for material being shipped.
- D. Omission of technical name of material following n.o.s. description of material offered for export by vessel.
- E. The letters "RQ" not displayed in association with the proper shipping name when required.

### II. PACKAGING (CONTAINERS IN GENERAL)

- A. Use of DOT specification containers which are not authorized for the commodity being shipped.
- B. Use of containers that are leaking.
- C. Manufacturing and marking containers as meeting a DOT specification when they do not meet the specification.
- D. Packagings exceeding maximum quantity limitations for materials.
- E. Packages improperly marked.
- F. Offering for shipment improperly packaged material.
- G. Consignee or consignor's name marking omitted from packaging.
- H. Omission of identification numbers on packagings.

### III. CONTAINERS (MISCELLANEOUS)

#### A. STEEL

- 1. Labeled containers (without further overpack) with no DOT specification marking (commonly found are 5 gallon 29 gauge metal pails and 5 gallon rectangular cans).
- 2. Packages of hazardous materials with temporary repairs.
  - a. Damaged, sealed with tape, putty, chewing gum, or screws.
  - b. Shipped upside down.
- 3. Labeled containers in improper condition.
  - a. Dented.
  - b. Rusted or corroded. (NOTE: These are judgemental decisions).
- 4. Labeled containers on which specification markings are illegible.
- 5. Labeled reused containers marked "NRC" (look for old date of manufacturer, dents, rust, and paint layers).
- 6. Labeled reused containers marked "STC" and/or 17C, 17E, and 17H with no reconditioner's marking.
- 7. Labeled reused containers with a reconditioner's marking that is not a DOT 17C, 17E or 17H container.
- 8. Labeled 55 gallon open-head drums with 2 rolling hoops and/or less than 5/8" ring bolt, non-drop forged ring lugs, and/or "lever lock" ring closures. (Good possibility of non-DOT specification.)
- 9. Imported drums marked as meeting the DOT hazardous materials regulations.

#### B. CORRUGATED FIBERBOARD

- 1. Boxes with no DOT specification marking when inside packagings larger than the "limited quantity" exception for the commodity and specification packaging is required.
- 2. Boxes marked with DOT specification markings which are poorly constructed (i.e., gaps, uneven closures, seams and joint separation).
- 3. If inner flaps do not meet, are fill-in pieces used to fill void?
- 4. Boxes damaged by water.
- 5. Improperly closed boxes (look for masking tape, cellophane tape, and string).
- 6. Leaking containers.
- 7. Non-DOT specification fiberboard box used in lieu of specification container when required.

#### C. POLYETHYLENE CONTAINERS

- 1. Open-head polyethylene containers (used for materials not authorized to be in them).
- 2. Illegibly marked containers.
- 3. Leaking containers offered for transportation.
- 4. When poison is shipped, is the container marked POISON?

#### D. FIBER DRUMS

- 1. Non-DOT specification fiber drums.
- 2. Fiber drums constructed of materials weaker than required by the specification.
- 3. Use of fiber drum marked DOT-21P without inside polyethylene liner.
- 4. Using fiber drum marked "STC" more than once for hazardous materials.
- 5. Fiber drum damaged by forklift truck.
- 6. Improper markings on containers for the commodity being shipped.

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- E. CYLINDERS
1. Re-use of single-use cylinders such as DOT Specification 39.
  2. Cylinders in use beyond test date.
  3. Cylinders in improper condition:
    - a. No valve protection
    - b. Bulge in side
    - c. Dented or corroded
    - d. Defective valve
  4. Cylinders re-filled by other than the owner of the cylinder without permission.
  5. Cylinders improperly marked (duplication of serial numbers).
  6. Cylinders offered for transportation without proper identification of contents.
  7. Identification symbols not registered with the Bureau of Explosives or the Department of Transportation.
  8. Illegible cylinder markings.
- F. PORTABLE TANKS
1. Name of owners or lessee omitted on tank.
  2. No labels and/or placards displayed on tank containing hazardous materials.
  3. No identification number displayed on the placard or on an orange panel.
- G. CARGO TANKS
1. Using a cargo tank, marked for one hazardous material, for another hazardous material without proper identification of contents.
  2. Improperly marked, e.g. size of marking or not marked in contrasting color.
  3. Omission of the marking "QT" (Quenched and Tempered Steel) or "NQT" (other than Quenched and Tempered steel), when required on cargo tank.
  4. Omission of identification number on placard or orange panel.
- IV. MARKING OF CONTAINERS
- A. No commodity description (proper shipping name) on the container.
  - B. No name and address of consignee or consignor on the container.
  - C. No DOT Exemption number on containers shipped under DOT Exemptions.
  - D. Container markings not in a contrasting color.
  - E. Container of liquid hazardous material not marked on outside "THIS END UP" or "THIS SIDE UP."
  - F. Gross weight not marked on Radioactive Materials packages weighing over 110 pounds.
  - G. Reconditioned drums improperly marked.
  - H. USA not included as part of the DOT Specification markings for Radioactive Materials packages destined for export.
  - I. Portable tanks not marked with proper name of the hazardous material.
  - J. Omission of identification numbers (when required) on placard or orange panel.
- V. LABELING
- A. No labels on outer container to represent mixed packaging of hazardous materials (materials with more than one hazard - dual labeling).
  - B. Label on the container not consistent with the hazard class on the shipping papers when appropriate.
  - C. Use of obsolete labels.
  - D. Color and/or size of label does not meet the standards of the CFR, Title 49, Sec. 172.407.
  - E. No label on container of hazardous materials when required.
  - F. No label on shipments destined for air transport.
  - G. Labeling containers not authorized to be labeled.
  - H. No label on "LIMITED QUANTITIES" offered for air transportation.
  - I. Less than two Radioactive Materials labels (White I, Yellow II or Yellow III) on containers (two opposite sides).
- VI. PLACARDING
- A. Failure to placard vehicle requiring placarding.
  - B. Failure to use more than one kind of placard to indicate more than one hazard class of material loaded within vehicle.
  - C. Freight container containing hazardous material over 640 cubic feet not placarded.
  - D. Placards not applied to both sides of cargo tank.
  - E. Placarding material not authorized to be placarded.
  - F. Omission of identification numbers (when required) on placard or orange panel.
- VII. SHIPPING PAPERS
- A. No proper shipping name and/or classification of hazardous material entered on shipping papers.
  - B. Proper shipping name and/or classification abbreviated.
  - C. No certification for shipment.
  - D. No wordage for "LIMITED QUANTITY" on shipments excepted from specification packaging and labeling.
  - E. No DOT Exemption number on shipments moving under DOT Exemption.
  - F. Color of label indicated in lieu of the proper hazard class.
  - G. Improper format for hazardous materials description on shipping papers, e.g., HM entries not first, highlighted or no HM column.
  - H. No identification number (UN or NA) on shipping paper.

THIS MATERIAL MAY BE REPRODUCED WITHOUT SPECIAL PERMISSION FROM THIS OFFICE

NOTE: Send comments or suggestions to the address listed below:

Information Services Division, DMT-II  
Office of Operations and Enforcement  
Materials Transportation Bureau  
U.S. Department of Transportation  
Washington, D.C. 20590

REVISED JANUARY 1985

**MKIL40493**

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U.S. Department  
of Transportation  
  
Research and  
Special Programs  
Administration

CHEM OP 30.55 Exhibit 3  
9/15/85 9/15/85

## HAZARDOUS MATERIALS TRANSPORTATION GUIDE FOR SHIPPERS

**USE OF GUIDE** - This Guide is presented as an aid to shippers of hazardous materials. It does not contain or refer to all of the DOT requirements for shipping hazardous materials. For specific details, refer to all of the DOT requirements for shipping hazardous materials. For specific details, refer to the Code of Federal Regulations (CFR), Title 49, Transportation, Parts 100-199.

The following is offered as a step-by-step program to aid compliance with the applicable DOT Regulations.

- STEP 1 - DETERMINE THE PROPER SHIPPING NAME** - The shipper must determine the proper shipping name of the materials as listed in the Hazardous Materials Table, Sec. 172.101, Column (2).
- STEP 2 - DETERMINE THE HAZARD CLASS OR CLASSES**
- A. Refer to the Table, Sec. 172.101, Column (3) and locate the hazard class of the material.
  - B. If more than one class is shown for the proper shipping name, determine the proper class by definition.
  - C. If the materials have more than one hazard, classify the material based on the order of hazards in Sec. 173.2.
- STEP 3 - SELECT THE PROPER IDENTIFICATION NUMBERS**
- A. Refer to the Table, Sec. 172.101, Column (3a) and select the Identification Number (ID) that corresponds to the proper shipping name and hazard class.
  - B. Enter the ID number(s) on the shipping papers and display them, as required, on packagings, placards and/or orange panels.
- STEP 4 - DETERMINE THE MODE(S) OF TRANSPORT TO ULTIMATE DESTINATION**
- A. As a shipper, you must assure yourself that the shipment complies with the various modal requirements.
  - B. The modal requirements may affect the following: (1) Packaging; (2) Quantity per Package; (3) Marking; (4) Labeling; (5) Shipping papers; (6) Certification.
- STEP 5 - SELECT THE PROPER LABEL(S) AND APPLY AS REQUIRED**
- A. Refer to the Table, Sec. 172.101, Column (4) for required label(s).
  - B. For details on labeling refer to: (1) Additional Labels, Sec. 172.402; (2) Location of Labels, Sec. 172.406; (3) Packagings (Mixed or Consolidated), Sec. 172.404(a) and (b); (4) Packages Containing Samples, Sec. 172.402(h); (5) Radioactive Materials, Sec. 172.403; (6) Authorized Label Modifications, Sec. 172.405.
- STEP 6 - DETERMINE AND SELECT THE PROPER PACKAGES**
- A. Refer to the Table, Sec. 172.101, Column 5(a) for exceptions and Column (5b) for authorized packagings. Consider the following when selecting an authorized container: Quantity per package; Cushioning material, if required; Proper closure and reinforcement; Proper pressure; Outage; etc. as required.
  - B. If packaged by a prior shipper, make sure the packaging is correct and in proper condition for transportation.
- STEP 7 - MARK THE PACKAGING (INCLUDING OVERPACKS)**
- A. Apply the required markings (Sec. 172.300); Proper shipping name and ID number, when required (Sec. 172.301); Name and address of Consignee or Consignor (Sec. 172.306).
  - B. For details and other required markings, See Sections 172.300 through 172.338.

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**STEP 8 - PREPARE SHIPPING PAPERS**

- A. The basic requirements for preparing shipping papers include: Proper Shipping name; Hazard class; ID number; Total quantity; Shipper's certification.
- B. Make all entries on the shipping papers using the information required and in proper sequence (Sec. 172.202).
- C. For additional requirements, see Sections 172.200 through 172.205.

**STEP 9 - CERTIFICATION**

- A. Each shipper must certify by printing (manually or mechanically) on the shipping papers that the materials being offered for shipment are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable DOT Regulations (Sec. 172.204).
- B. For surface shipment, see Sec. 172.204(a) and (b); for air shipments, see Sec. 172.204(c).

**STEP 10 - LOADING, BLOCKING AND BRACING** - When loading hazardous materials into the transport vehicle or freight container, each package must be loaded, blocked and braced in accordance with the requirements for the mode of transport.

- A. If the shipper loads the freight container or transport vehicle, the shipper is responsible for the proper loading, blocking and bracing of the materials.
- B. If carrier personnel do the loading, the carrier is responsible.

**STEP 11 - DETERMINE THE PROPER PLACARD(S)** - Each person who offers hazardous materials for transportation must determine that the placarding requirements have been met.

- A. For Highway, unless the vehicle is already correctly placarded, the shipper must provide the required placard(s) and required Identification number(s) (Sec. 172.506).
- B. For Rail, if loaded by the shipper, the shipper must placard the rail car if placards are required. (Sec. 172.508)
- C. For Air and Water shipments, the shipper has the responsibility to apply the proper placards.

**STEP 12 - HAZARDOUS WASTE/HAZARDOUS SUBSTANCE**

- A. If the material is classed as a hazardous waste or hazardous substance, most of the above steps will be applicable.
- B. Pertinent Environmental Protection Agency Regulations are found in the Code of Federal Regulations, Title 40, Part 262.

*"It is the duty of each person who offers hazardous materials for transportation to instruct each of his officers, agents, and employees having any responsibility for preparing hazardous materials for shipment as to the applicable regulations. . ." (Section 173.1(b))*

This means that shippers are required to make certain that those officers, agents and employees who have any responsibility for preparing or offering hazardous materials for transportation are thoroughly instructed concerning the regulations as they apply to their job functions.

**NOTE:** The following suggestions will help to comply with this requirement:

- 1. Identify all personnel who have hazardous materials transportation responsibilities.
- 2. Determine what additional instruction or training each needs.
- 3. Assure that those needing instruction receive it.
- 4. Maintain record of training.
- 5. Periodically review training needs in order to maintain the required expertise.

**AS A FINAL CHECK AND BEFORE OFFERING THE SHIPMENT FOR TRANSPORTATION, VISUALLY INSPECT YOUR SHIPMENT.**

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INFORMATION SERVICES DIVISION, DMT-II  
OFFICE OF OPERATIONS AND ENFORCEMENT  
MATERIALS TRANSPORTATION BUREAU  
U.S. DEPARTMENT OF TRANSPORTATION  
WASHINGTON, D.C. 20590

**MKIL40495**

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Research and  
Special Programs  
Administration

CHEM OP 30.55 Exhibit 4  
9/15/85 9/15/85

## GUIDE FOR MARKINGS

**USE OF GUIDE** - This guide was prepared as an aid to shippers and carriers of hazardous materials. It does not contain or refer to all of the DOT requirements for marking. For specific details, refer to the appropriate Sections of the Code of Federal Regulations, Title 49, Transportation, Parts 100 - 199.

**NOTE:** Rulemaking proposals for new and/or existing regulations are outstanding or contemplated. Keep up to date with the changes.

**MARKING** - means placing on the outside of a shipping container, one or more of the following: the descriptive name, proper shipping name, hazard class, identification number, instructions, caution and/or weight. Marking also includes any required specification marks on the inside or outside shipping container.

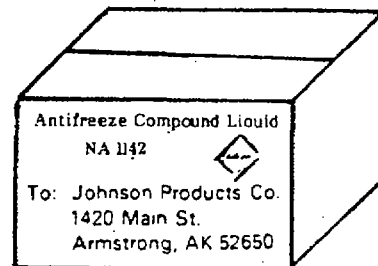
### DESCRIPTIVE INFORMATION

#### I. GENERAL REQUIREMENTS (Sec. 172.300-172.304)

A. **UNLESS SPECIFICALLY EXCEPTED**, ALL containers of hazardous materials must be marked with: (1) the proper shipping name(s), (2) UN or NA Identification number(s) of the contents (Sec. 172.101 or 172.102), and (3) the name and address of either the consignee or consignor.

B. All markings must be:

1. Durable and in English, and printed on (or affixed to the surface of) the package (or on a label, tag or sign);
2. On a background of a sharply contrasting color, and unobscured by labels or attachments; and
3. Placed away from other markings that could reduce effectiveness.



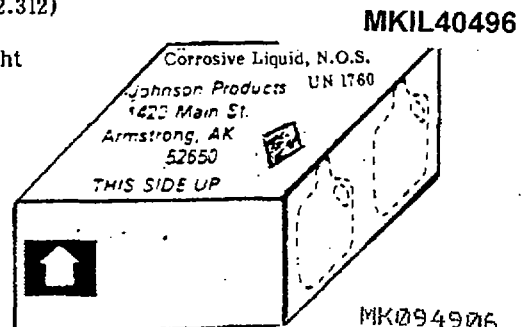
#### II. SPECIFIC REQUIREMENTS

##### A. HAZARDOUS SUBSTANCES

1. When the proper shipping name for a mixture or solution does not identify the material making it a hazardous substance, the name or names of such hazardous substance materials as shown in Sec. 172.101 or 172.102 must be shown on the packaging.
2. Hazardous materials in packagings (of 110 gallons or less and containing a hazardous substance) must display "RQ" in association with the proper shipping name (Example: Benzoyl chloride (RQ-100/454)).

##### B. INSIDE CONTAINERS FOR LIQUIDS: (Sec. 172.312)

1. Must be packed with closures in the upright position;
2. Must be marked on the outside with "THIS END UP" or "THIS SIDE UP"; and
3. Must use arrow symbol to show upright orientation of packages. (See ANSI Standard MH6.11968 "Pictorial Marking for Handling Goods"). Example: "THIS SIDE UP" or "THIS WAY UP."



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### C. CONTAINERS - OVERPACKS

1. When a DOT Specification container is overpacked in another container, the overpack must meet the requirements of Section 173.21 and Section 173.24.
2. Outside container must be marked in accordance with Section 173.25 (Examples: "THIS SIDE UP" or INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS.)

### D. CONTAINERS - CYLINDERS

1. All cylinders must be marked in accordance with Section 173.34 and Section 173.301 through Section 173.306.
2. Reinspected and Retested Cylinders must be marked (Section 173.34(e)(6)).

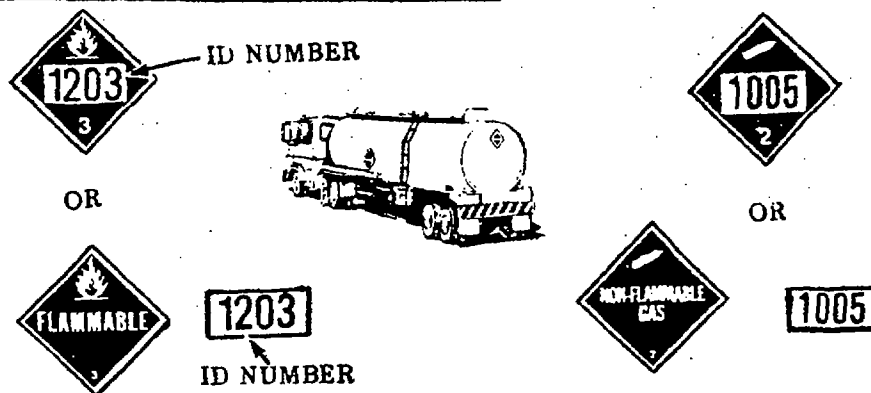
## III. TANKS

### A. PORTABLE TANKS (Sections 172.326 and 172.332) - Portable tanks must be marked with:

1. Proper shipping name - in letters at least 2 inches high and on to opposite sides;
2. Identification number - UN or NA (United Nation or North American) identification number on: TWO OPPOSITE SIDES (near proper shipping name) of tanks of less than 1,000 gallons capacity; on EACH SIDE AND EACH END of tanks of more than 1000 gallon capacity;
3. Name of owner or lessee;
4. All inlets and outlets (except safety relief valves) when carrying compressed gases (DOT-51)
5. Whether or not the inlets and outlets communicate with vapor or liquid (Section 178.245-6(b)).

### B. CARGO TANKS - HIGHWAY (COMPRESSED GASES) (Sec. 172.328) -Cargo tanks must be marked with:

1. Proper shipping name OR appropriate common name (such as "Refrigerant Gas") Letters must be at least 2 inches high (Sec. 172.101 or 172.102) on each end and each side.
2. Identification number - (Section 172.101 or 172.102).
3. Inlets and outlets (except safety relief valves - applies to DOT MC 331 tanks)
4. Whether the inlets and outlets communicate with vapor or liquid, when the tank is filled to its maximum permitted filling density (Section 178.337-9(c)).
5. The accurately name of contents of the tank.



If the ID number is not displayed on the ends of the vehicle, check the sides of the transport vehicle.  
NOTE: When ID numbers are displayed on placards, orange panels are not required. When ID numbers are displayed on orange panels, placards are ALSO REQUIRED.

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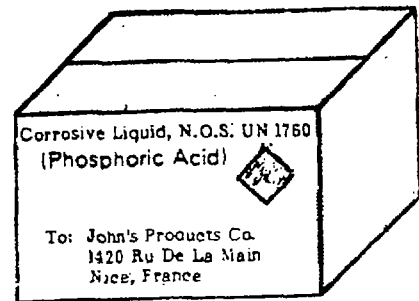
C. **TANK CARS** (Sec. 172.330) - Certain tank cars are required to be marked on each side and each end (Sec. 172.332 and Parts 173 and 179 for specific details). IF REQUIRED TO BE MARKED, they must include:

1. Proper shipping name OR appropriate common name in letters at least 4 inches high at least 5/8 inch stroke.
2. Identification numbers - Display the appropriate number(s) on placards or orange panels (Sec. 172.101 and 172.102).
3. The accurate name of the contents contained in the tank.

NOTE: For requirements for multi-unit tank car tanks, see Sec. 179.300 through 179.302.

#### IV. EXPORT BY WATER (Sec. 172.302)

- A. All authorized "n.o.s." entries for export by water must have the technical name(s) of the material immediately following the proper shipping name.
- B. For mixtures of two or more hazardous materials, the technical name of at least two components must be identified (Sec. 172.101 or 172.102).

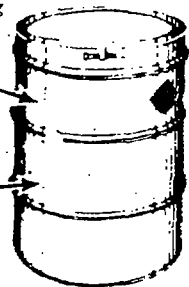


#### V. RADIOACTIVE MATERIALS (Sec. 172.310)

- A. Gross weight must be marked on container weighing over 110 pounds.
- B. "TYPE A" or "TYPE B," (as appropriate) in letters at least 1/2" high.
- C. "USA" must follow the specification markings or package certification on export shipments.

Radioactive Material, Fissile, N.O.S. UN 2918  
USA/0777/ B(U)F Gross WT 320kg  
Fissile Class II, USA Type B

To: John's Products Co.  
1420 Ru De La Main  
Nice, France

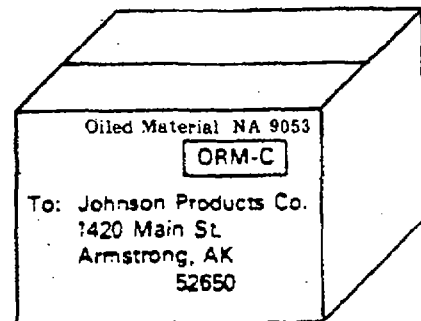


#### VI. OTHER REGULATED MATERIALS (ORM's) (Sec. 172.316)

- A. Place ORM immediately following, or below, the proper shipping name.
- B. Marking must be within a rectangular border - approximately 1/4 inch large on each side of "ORM\_\_."
- C. Use one of the following:
 

|          |          |              |
|----------|----------|--------------|
| A. ORM-A | C. ORM-B | E. ORM-D     |
| B. ORM-B | D. ORM-C | F. ORM-D-AIR |
|          |          | G. ORM-E     |

NOTE: By these markings, the shipper certifies that the material is properly described, classed, packaged, marked, and labeled AND in proper condition for transportation. A certificate is ALSO required on the shipping paper (Sec. 172.316(e)).



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### OTHER MARKING REQUIREMENTS

- I. **REQUALIFIED CONTAINERS - DRUMS** (Marked by reconditioner)  
Some steel containers in the DOT Series (DOT 17C, 17E and 17H) may be qualified for reuse by a DOT registered reconditioner of drums. The drums are stripped of labels, exemption numbers and other markings. They are reconditioned to meet Sec. 173.28(m) and marked with the appropriate registration assigned number.
- II. **CYLINDERS & TANKS** - (Marked with inspection and/or retest date). Reusable cylinders, portable tanks, cargo tanks and tank cars must be either visually inspected or retested at periodic intervals. The date of the requalification must be on the container (see Sec. 173.24, 173.31, 173.32, 173.33 and 173.34).
- III. **CARGO HEATERS** - Cargo heaters authorized for use with flammable liquid or gas must be marked in accordance with Sec. 177.834(1)(2)(e) and (f).
- IV. **MOTOR VEHICLES** - A carrier may not move a transport vehicle containing hazardous material unless the vehicle is marked in accordance with Part 172 or unless an emergency exists (see Sec. 177.823 and 177.824 for details).

### SPECIFICATION CONTAINERS

- I. **GENERAL** - Specification containers must be marked with DOT specification numbers under which the containers are made (Parts 178 and 179). The manufacturer's name and address or symbol must be registered with the Associate Director for the Office of Hazardous Materials Regulation. Duplicate symbols are not authorized.
- II. **MARKINGS** - All containers must comply with the marking requirements of Section 173.24, 178 and 179. Exception for Canadian and other import/export situations are found in Sec. 171.12 and 173.8.

NOTE: For certain containers, specific detailed information (such as original test date information and type of material) are required (See Parts 178 and 179). As a final check before offering a shipment for transportation, visually inspect your shipment.

This handout does not contain all the marking requirements. It is designed as a guide only. For details on markings, consult the Code of Federal Regulations, Title 49, Parts 100-199.

As a final check before offering a shipment for transportation, visually inspect your shipment.

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OFFICE OF OPERATIONS AND ENFORCEMENT  
MATERIALS TRANSPORTATION BUREAU  
U.S. DEPARTMENT OF TRANSPORTATION  
WASHINGTON, D.C. 20590

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REVISED JANUARY 1985

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CHEM OP 30.55 Exhibit 5  
9/15/85 9/15/85

# HAZARDOUS MATERIALS TRANSPORTATION GUIDE FOR CARRIERS

**USE OF GUIDE** - This Guide was prepared as an aid to carriers of hazardous materials. It does not contain or refer to all of the DOT requirements for transporting hazardous materials. For specific details, refer to the Code of Federal Regulations (CFR), Title 49, Transportation, Parts 100-189.

Basically, all "for hire" carriers and all "private carriers" are subject to the same or at least very similar DOT hazardous materials regulations. This is true regardless of mode, engaged in commerce and transporting hazardous materials.

Containerization and other modern freight handling procedures frequently prevent initial carriers from making physical inspections of the freight. It is more difficult for interline (secondary) carriers to determine the physical condition of freight or regulatory compliance. Carriers, therefore, must frequently accept the word of shippers as to the suitability of the package and the accuracy of the material description. Therefore, it is very important to carefully review the shipping document(s) including the shippers certification. Always visually inspect the transport vehicle or freight container for leaks or potential problems.

Careful attention to the following subject areas will aid in complying with the "Carrier Regulations":

## I. DETERMINE EMPLOYEE QUALIFICATIONS

*"It is the duty of each such carrier to make the prescribed regulations effective and to thoroughly instruct employees in relation thereto."* [Refer to CFR, Title 49, Sec. 174.7 (Rail); Sec. 175.20 (Air); Sec. 176.13 (Water); and Sec. 177.800 (Highway)].

This means that carriers are required to make certain that employees who have any responsibility for receiving, processing or transporting hazardous materials are thoroughly instructed. They must know the applicable regulations that apply to their job functions. The following suggestions will help to meet this requirement:

- A. Identify all personnel who have hazardous materials transportation responsibilities.
- B. Determine what additional instruction or training each needs (if any).
- C. Assure that those needing instruction receive and absorb the instruction.
- D. Maintain records of training.
- E. Periodically review training needs and maintain the required expertise.

## II. DETERMINE CONDITION OF TRANSPORT VEHICLE

- A. Make certain that the cargo space is suitable for loading. It should be free of nails and other protruding sharp objects.
- B. Make certain that the vehicle is suitable for the material to be loaded. It must be in compliance with applicable carrier safety and hazardous material regulations, as well.

## III. MAY THE SHIPMENT BE ACCEPTED FOR TRANSPORT?

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*"A carrier may not transport... any shipment of a hazardous material that is not prepared for transportation in accordance with Parts 171, 172, and 173."* [Refer to CFR, Title 49, Sec. 174.3 (Rail); 175.3 (Air); 176.3 (Water); 177.801(a) (Highway)].

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To comply with this provision, a carrier must:

- A. Determine that the shipping papers are prepared in proper format and are accurate and complete. At minimum, they must include the proper shipping name, ID number, hazard class, quantity and consignee (or consignor) name and address.
- B. Obtain a proper shipper's certificate (unless exempted).
- C. Determine that proper placard(s) and ID number(s) are displayed, when required.

When practical, a carrier should also determine that:

- A. Authorized packagings are used and that they are in proper condition for transportation.
- B. Each package is properly marked and labeled, when required.
- C. The freight is adequately blocked and braced to prevent movement and/or damage in transit.

#### IV. IS THE SHIPMENT TO BE INTERLINED?

- A. Properly prepare the material so that the secondary carrier will accept it from you. This is particularly important for intermodal and international shipments.
- B. Modal requirements may affect the following: (1) Packaging; (2) Quantity per package; (3) Marking; (4) Labeling; (5) Shipping papers; (6) Certification.

#### V. CARRIER LOADED FREIGHT

When the carrier loads the transport vehicle, make certain that:

- A. Documentation matches the freight.
- B. Materials are chemically compatible.
- C. Poisons are not loaded with foodstuffs (unless excepted).
- D. Damaged or leaking packages are not loaded.
- E. Freight is properly blocked and braced to prevent movement and/or damage in transit.
- F. Proper placards and ID numbers are displayed, when required.
- G. Required documentation is furnished the driver/pilot/conductor/captain.

#### VI. HAZARDOUS WASTE/HAZARDOUS SUBSTANCE

- A. When the material is classified as a hazardous waste or hazardous substance, there are additional registration, identification, security and documentation regulations as stated in Sections 172.205 and 172.324.
- B. Pertinent Environmental Protection Agency Regulations are found in the Code of Federal Regulations, Title 40, Part 262.

#### VII. INCIDENT AND/OR ACCIDENT REPORTS

The carrier who transports hazardous materials (including hazardous waste) is responsible for reporting requirement. Most incidents/accidents involving unintentional releases of hazardous materials in transportation must be reported to DOT. Detailed criteria concerning telephonic and/or written reports are published in CFR, Title 49, Sections 171.15, 171.16 and 171.17.

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INFORMATION SERVICES DIVISION, DMT-11  
OFFICE OF OPERATIONS AND ENFORCEMENT  
MATERIALS TRANSPORTATION BUREAU  
DEPARTMENT OF TRANSPORTATION  
WASHINGTON, D.C. 20590

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Administration

CHEM OP 30.55 Exhibit 6  
9/15/85 9/15/85

## SOURCES OF HAZARDOUS MATERIALS WARNING LABELS AND PLACARDS

In order to comply with the Hazardous Materials Regulations, you must use the correct labels and placards. This listing has been designed as a convenient reference for purchasing labels and placards. They must comply with the Code of Federal Regulations, Title 49, Parts 100-199, Subpart E - Labeling and Subpart F - Placarding, including Appendices A and B of Part 172.

It is the responsibility of the shipper and/or transporter to insure the labels and placards meet the specification requirements.

**NOTE:** The use of labels, placards and orange panels supplied by these sources or any other source by shippers and/or carriers does not relieve persons from complying with the Department of Transportation's Hazardous Materials Regulations.

### CALIFORNIA

Avery Label Systems<sup>1</sup>  
777 East Foothill Blvd.  
Azusa, CA 91702  
(213) 969-3311

Bee Line, Inc.<sup>2</sup>  
26750 Wattis Way  
San Francisco, CA 94080  
(415) 871-4848

California Labels Inc.<sup>1</sup>  
461 North H Street  
P.O. Box 12284  
Fresno, CA 93777  
(209) 485-1091  
(800) 742-1033 (N. Calif)

Imperial Marking Systems, Inc.<sup>3</sup>  
P.O. Box 2337  
990 Carden Street  
San Leandro, CA 94577  
(415) 562-4459

### DIST. OF COLUMBIA

American Trucking Assoc., Inc.<sup>3</sup>  
1516 P Street, N.W.  
Washington, D.C. 20036  
(202) 797-5384

### FLORIDA

Creative Products International<sup>2</sup>  
P.O. Box 14356  
Tampa, FL 33690-0356  
(813) 839-6356

### GEORGIA

Southeastern Label Co.<sup>3</sup>  
P.O. Box 80443  
Chamblee, GA 30366  
(404) 455-8816

### HAWAII

Safety Systems Hawaii, Inc.<sup>3</sup>  
302 Mokauea Street  
Honolulu, HI 96819  
(808) 847-4018

### ILLINOIS

Bureau of Labels<sup>3</sup>  
38 North Broadway Street  
Des Plaines, IL 60016  
(312) 635-7280

Labelmaster<sup>3</sup>  
5724 N. Wolcott Avenue  
Chicago, IL 60646  
(800) 621-5808  
(312) 973-5100

Legible Signs, Inc.<sup>3</sup>  
2221 Nimitz Road  
Rockford, IL 6110  
(815) 654-0100

Related Products, Inc.<sup>1</sup>  
3223 N. Western Avenue  
Chicago, IL 60618  
(312) 528-2900

### MICHIGAN

Labeltape Inc.<sup>1</sup>  
P.O. Box 8823  
4275 Airwest Drive S.E.  
Grand Rapids, MI 49508  
(616) 698-8890

Quickway Staput, Inc.<sup>3</sup>  
P.O. Box 1086  
Muskegon, MI 49443  
(616) 722-2044/739-8950

Whitlam Label Co. Inc.<sup>3</sup>  
6000 Rinke  
Warren, MI 48091  
(313) 757-5100

### MINNESOTA

Dawson Patterson Printing Inc.<sup>3</sup>  
366 Wacouta Street  
St. Paul, MN 55101  
(612) 222-8445

Meyers Printing Company<sup>1</sup>  
Change-A-Label Division  
500 South Third Street  
Minneapolis, MN 55415  
1-800-328-4067

### NEW JERSEY

Ever Ready Label Corp.<sup>3</sup>  
357 Cortlandt Street  
Belleville, NJ 07109  
(201) 759-5500

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NEW JERSEY

Lawrence Packaging Supply<sup>3</sup>  
113 North 13th Street  
Newark, NJ 07107  
(201) 485-4400  
(212) 962-4393 (NY)

Mar-Kal Products Corp.<sup>3</sup>  
105 Walnut Street  
Montclair, NJ 07042  
(201) 783-7155

Prest-On Products Corp.<sup>3</sup>  
870 Springfield Road  
Union, NJ 07083  
(201) 851-9777

UNZ & Co.<sup>3</sup>  
190 Baldwin Avenue  
Jersey City, NJ 07306  
(800) 631-3098/(201) 795-5400  
(212) 344-2270

NORTH CAROLINA

Soabar Graphics<sup>3</sup>  
P.O. Box J  
2305 Soabar Drive  
Greensboro, NC 27402  
(919) 275-9371

OHIO

MPI Label Systems<sup>1</sup>  
P.O. Box 70  
450 Courtney Road  
Sebring, OH 44672  
(216) 938-2134

Triangle Label Inc.<sup>1</sup>  
60-A Novner Drive  
Cincinnati, OH 45215  
(513) 772-5649

TENNESSEE

Artcraft Converters, Inc.<sup>1</sup>  
710 South Fourth Street  
Memphis, TN 38101  
(901) 525-1441

TEXAS

Carlton Label & Decal Inc.<sup>3</sup>  
3150 Nasa Road One  
Seabrook, TX 77586  
(713) 334-1543  
(800) 231-5988

Contact Products, Inc.<sup>3</sup>  
P.O. Box 220063  
Dallas, TX 75222  
(214) 231-6367

WISCONSIN

W. H. Brady Co.<sup>3</sup>  
727 W. Glendale Avenue  
P.O. Box 571  
Milwaukee, WI 53201  
(414) 961-2233

J. J. Keller<sup>3</sup>  
145 W. Wisconsin Avenue  
Neenah, WI 54956  
(414) 722-2848  
1-800-558-5011

- 
- 1 - Labels Only  
2 - Placards Only  
3 - Labels and Placards

Note: Companies not listed but would like to be placed on this listing must submit samples of their labels, placards, or orange panels to the attention of the address listed below.

THIS MATERIAL MAY BE REPRODUCED WITHOUT SPECIAL PERMISSION FROM THIS OFFICE.

Information Services Division, DMT-11  
Office of Operations and Enforcement  
Materials Transportation Bureau  
U.S. Department of Transportation  
Washington, D.C. 20590

REVISED OCTOBER 1984

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CHEM OP 30.55 Exhibit 7  
9/15/85 9/15/85

## **Guide for Reuse of Packagings (Boxes, Kegs, Cylinders and Steel Drums)**

The following information has been abstracted from Code of Federal Regulations, Title 49, Parts 100-177 and is intended to serve as an aid for in-house use when reviewing the requirement on the reuse of containers. It does not include or refer to all applicable requirements.

### **1. REQUIREMENTS (Sec. 173.28)**

- A. **CONTAINERS** - Any container used more than once (refilled and reshipped after having been previously emptied) must meet the Code requirements. That is, containers must be in such condition, that they comply in all respects with the prescribed requirements. This includes container closing devices and cushioning materials.
- B. **REPAIR OF CONTAINERS** - Repairs to containers must be made in accordance with requirements for materials and construction as prescribed in Parts 178 and 179 of Title 49 for new containers, or as otherwise prescribed. All parts that are weak, broken, or otherwise deteriorated must be replaced.
- C. **MARKING AND LABELING**
  - (1) All markings applied and prescribed by the regulations must be maintained in a legible condition.
  - (2) If the prescribed markings cannot be kept plain and legible, then a metal plate, with a reproduction of the prescribed markings plainly stamped thereon may be brazed, soldered or securely fastened to the containers.
  - (3) All containers previously used for the shipment of any hazardous materials must have the old markings thoroughly removed or obliterated before being used for the shipment of other articles. These markings include the name of contents, addresses, and labels.

### **2. USE OF CONTAINERS (Sec. 173.28)**

- A. Boxes previously used for High explosives containing a liquid explosive ingredient not contained in an inside metal container must not be used again for shipments of any character.
- B. Boxes that have been contaminated by liquid explosive composition must not be used for shipment of any character.
- C. Kegs previously used for any chlorate must not be used for shipments of any character.
- D. Metal Kegs previously used for black powder not contained in any interior package must not be used for shipment of any explosive.
- E. Containers used for shipments of etching acid, n.o.s must not be reused for shipment of any commodity.
- F. Cylinders used in anhydrous hydrofluoric acid service must comply with the requirements of Sec. 173.264(b)(1) AND must not be used in any other services.

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3. REUSE OF DOT SPECIFICATIONS: 17C, 17E AND 17H STEEL DRUMS (Sec. 173.28(m))

- A. Specification 17C, 17E, and 17H steel drums which contents have been removed, may be reused as prescribed in Part 173. They can be used as packagings for shipment of flammable liquids, flammable solids, organic peroxides, oxidizers, poisons (see Sec. 173.370, radioactive materials and corrosive liquids (see Sections 173.249 and 173.249(a)). However, only use if the following requirements, in addition to other requirements, of Sec. 173.28(m) are complied with PRIOR to each reuse.

NOTE: Containers that do not meet the requirement of DOT specification containers can be reused for Corrosive solids and any other hazardous materials. However, the commodity being packaged must not be capable of reacting with the steel container. The major requirements are outlined below:

1. Visual Inspection - Each drum must be thoroughly cleaned to remove all residue and foreign matter. It must be inspected for deterioration or defects. Parts that are weak, broken or otherwise deteriorated must be replaced. Closure devices and parts must be removed (if removable) and inspected for defects. Each open-head gasket must be replaced. Any drums which show evidence of deterioration such as:

- a. Visible pitting or creases,
- b. Significant reduction in parent metal thickness from rust, corrosion, metal fatigue or other material defect.

If it cannot be returned to its original shape and contour it DOES NOT QUALIFY for reuse.

NOTE: All repairs must be made in accordance with requirements for materials and construction as prescribed in the regulations for new containers.

2. Air Pressure Test for Leakage - Except for the removable head and adjacent chime area, the entire surface of each closed-head drum and each open-head drum, must be tested for leakage by constant internal air pressure.

- a. The leakage test must be conducted by (1) submersion under water; (2) completely covering the surface with soap suds or oil, or; (3) some other method that will be considered EQUALLY SENSITIVE.
- b. Leakers shall be rejected or repaired and retested. Repairs must be made by methods used in constructing containers and NOT BY SOLDERING. The air pressure must be maintained for a period of time sufficient to permit a complete inspection for leaks. The minimum constant internal air pressure for testing must be as follows:

| <u>Spec. No.</u> | <u>Capacity</u>     | <u>Minimun Test Pressure</u><br><u>Pounds per square inch (psi)</u> |
|------------------|---------------------|---|
| 17C              | All                 | 15 psi  |
| 17E              | Over 12 gallons     | 7 psi   |
| 17E              | 12 gallons, or less | 5 psi   |
| 17H              | Over 12 gallons     | 7 psi   |
| 17H              | 12 gallons, or less | 5 psi   |

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B. Equally Sensitive Test -

1. Outlined below are Leakage Test Methods Considered "Equally Sensitive" for Reconditioned 17C, 17E and 17H Drums.

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2. A number of questions have been raised concerning what other test methods would be considered "Equally Sensitive". Any test procedure is considered by the Office of Operations and Enforcement to be as "Equally Sensitive" as the methods specified in Section 173.28(m)(2) of the Hazardous Materials Regulations. If it—

- a. Will subject a drum to constant internal air pressure (at equilibrium with the system closed) at the specified minimum pressure.
- b. Utilizes an accurate pressure gauge or other measuring device which will permit readings to an accuracy of .10 psig (pounds per square inch gage pressure).
- c. Allows for sufficient time to discover leaks; and the process is reproducible.

NOTE: A visual inspection procedure that does not employ the minimum air pressure specified MAY NOT be used to qualify a drum for reuse under Section 173.28(m)(2).

3. Other test procedures not meeting the prescribed tests or all of the above "Equally Sensitive" criteria are not considered adequate to meet the requirements of these standards unless specific approval has been obtained from the Materials Transportation Bureau.

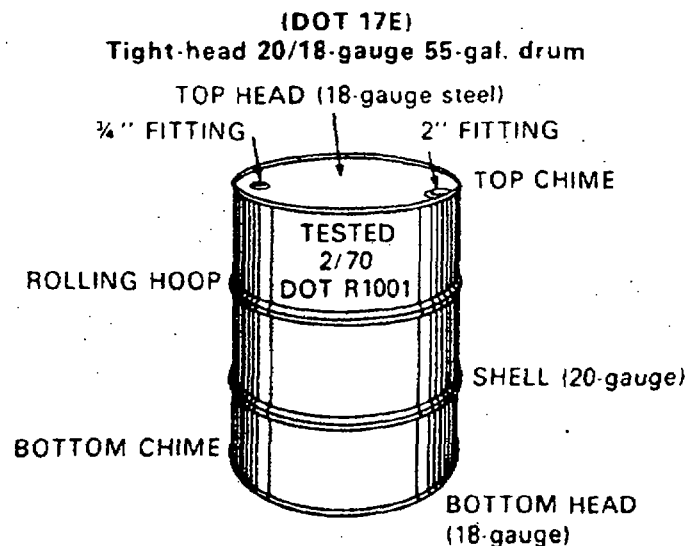
- a. Markings - All previous test markings, commodity identification markings, and labels must be removed.

- (1) All drums that qualify for reuse must be marked on the body within 10 inches of the top with the following information:

- a. "Tested"
- b. Month and Year it was Tested.
- c. DOT Registration Number of the reconditioner.

- (2) Markings must be at least 1/4 inch figures and the letters on contrasting background. (See figures 1 and 2)

EXAMPLE: TESTED 2/74  
DOT R1000



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Figure 1 DOT 17E - 55-gal. drum

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- b. Any drum meeting one specification which has been altered to meet another specification must be capable of meeting the new specification in all respects. Drums converted to meet another specification must bear the original specification markings. (See Figure 2)
- c. The old and new specification identification in conjunction with the markings shown above are required.

**EXAMPLE:** 17E/17H  
TESTED 2/74  
DOT R1000

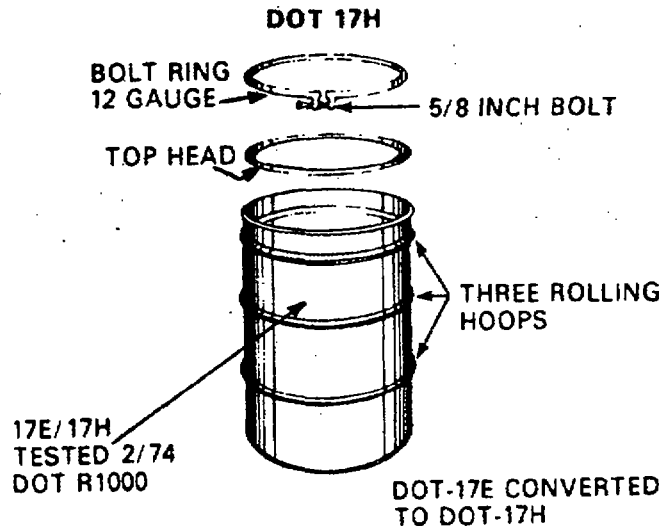


Figure 2 DOT-17E Converted to DOT-17H

- d. The DOT Registration number required for this marking must be obtained from: Associate Director for Office of Hazardous Materials Regulations, Materials Transportation Bureau, Washington, D.C. 20590.

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OFFICE OF OPERATION AND ENFORCEMENT  
MATERIALS TRANSPORTATION BUREAU  
DEPARTMENT OF TRANSPORTATION  
WASHINGTON, D.C. 20590

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REVISED JULY 1982

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U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

## HAZARDOUS MATERIALS TRANSPORTATION

CHEM OP 30.55 Exhibit 8  
9/15/85 9/15/85

# HAZARDOUS MATERIALS DEFINITIONS

The following definitions have been abstracted from the Code of Federal Regulations, Title 49, Transportation, Parts 100-177. Refer to the referenced sections for complete details. NOTE: In column (1), Sec. 172.101, Hazardous Materials Table, the plus (+) fixes the proper shipping name and hazard class. The name and class do not change whether the material meets or does not meet the definition of that class. [Sec. 172.101(a)(1)]

**HAZARDOUS MATERIAL** - A substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety and property when transported in commerce, and which has been so designated. (Sec. 171.8)

**MULTIPLE HAZARDS** - a material meeting the definition of more than one hazard class is classed according to its position in the lists in Sec. 173.2(a) and (b).

| DOT<br>HAZARD CLASS  | UN<br>CLASS | DEFINITION   |
|----------------------|-------------|--|
|                      |             | <u>An Explosive</u> - Any chemical compound, mixture, or device-- the primary or common purpose of which is to <u>function by explosion</u> , that is substantially instantaneous release of gas and heat. Exception--such compound, mixture, or device is otherwise specifically classified in Parts 170-189. (Sec. 173.50) |
| CLASS A<br>EXPLOSIVE | 1           | Detonating or otherwise of <u>maximum hazard</u> . The nine types of Class A explosives are defined in Sec. 173.53.  |
| CLASS B<br>EXPLOSIVE | 1           | <u>Flammable hazard</u> - In general, functions by <u>rapid burning</u> rather than detonation. Includes some explosive devices such as special fireworks, flash powders, etc. (Sec. 173.88)   |
| CLASS C<br>EXPLOSIVE | 1           | <u>Minimum hazard</u> - Certain types of fireworks and certain types of <u>manufactured articles containing restricted quantities</u> of Class A and/or Class B explosives as components. (Sec. 173.100)   |
| BLASTING<br>AGENT    |             | A material designed for blasting which has been tested in accordance with Sec. 173.114a(b). It must be so insensitive that there is very little probability of: (1) accidental explosion <u>or</u> (2) going from burning to detonation. [Sec. 173.114a(b)]  |
|                      |             | <u>Compressed Gas</u> - Any material or mixture having in-the-container a pressure EXCEEDING 40 psia at 70° F., OR a pressure exceeding 104 psia at 130° F.; or any liquid flammable material having a vapor pressure exceeding 40 psia at 100° F. [Sec. 173.300(a)]   |
|                      |             | <u>Non-liquefied compressed gas</u> is a gas (other than gas in solution) which, under the charged pressure, is entirely gaseous at a temperature of 70° F.  |
|                      |             | <u>Liquefied compressed gas</u> is a gas which, under the charged pressure, is partially liquid at a temperature of 70° F.   |

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| DOT<br>HAZARD CLASS | UN<br>CLASS | DEFINITION   |
|---------------------|-------------|--|
|                     |             | <u>Compressed gas in solution</u> is a compressed gas which is dissolved in a solvent.   |
| FLAMMABLE GAS       | 2           | Any compressed gas meeting criteria as specified in Sec. 173.300(b). This includes: lower flammability limit, flammability limit range, flame projection, or flame propagation.  |
| NONFLAMMABLE GAS    | 2           | Any compressed gas <u>other than</u> a flammable compressed gas.   |
| COMBUSTIBLE LIQUID  | 3           | Any liquid having a flash point <u>at or above</u> 100° F. and below 200° F. Authorized flash point methods are listed in Sec. 173.115(d). Exceptions are found in Sec. 173.115(b).  |
| FLAMMABLE LIQUID    | 3           | Any liquid having a flash point below 100° F. Authorized flash point methods are listed in Sec. 173.115(d). For exceptions, see Sec. 173.115(a).<br><br><u>Pyroforic Liquid</u> - Any liquid that ignites spontaneously in dry or moist air <u>at or below</u> 130° F. [Sec. 173.115(c)]   |
| FLAMMABLE SOLID     | 4           | Any solid material (other than an explosive) which is liable to cause fires through friction or retained heat from manufacturing or processing. It can be ignited readily and burns so vigorously and persistently, as to create a serious transportation hazard. Included in this class are spontaneously combustible and water-reactive materials. (Sec. 173.150)<br><br><u>Spontaneously Combustible Material (Solid)</u> - A solid substance (including sludges and pastes) which may undergo spontaneous heating or self-burning under normal transportation conditions. These materials may increase in temperature and ignite when exposed to air. (Sec. 171.8)<br><br><u>Water Reactive Material (Solid)</u> - Any solid substance (including sludges and pastes) which react with water by igniting or giving off <u>dangerous quantities</u> of flammable or toxic gases. (Sec. 171.8) |
| ORGANIC PEROXIDE    | 5           | An organic compound containing the bivalent -O-O- structure. It may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals. It must be classed as an organic peroxide unless it meets certain criteria listed in Sec. 173.151(a).  |
| OXIDIZER            | 5           | A substance such as chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily. It accelerates the combustion of organic matter. (See Sec. 173.151)  |
| POISON A            | 2           | <u>Extremely Dangerous Poisons</u> - Poisonous gases or liquids -- a <u>very small amount</u> of the gas, or vapor of the liquid, mixed with air is <u>dangerous to life</u> . (Sec. 173.326)  |
| POISON B            | 6           | <u>Less Dangerous Poisons</u> - Substances, liquids or solids (including pastes and semi-solids), other than Class A or Irritating materials--so toxic (or presumed to be toxic) to man that they are a hazard to health during transportation. (Sec. 173.381)   |

| DOT<br>HAZARD CLASS                   | UN<br>CLASS | DEFINITION  |
|---------------------------------------|-------------|---|
| IRRITATING<br>MATERIAL                | 6           | A liquid or solid substance which, upon contact with fire or air, gives off dangerous or intensely irritating fumes. They do <u>not</u> include any poisonous material, Class A. (Sec. 173.381)   |
| ETIOLOGIC<br>AGENT                    | 6           | An "etiologic agent" means a living micro-organism (or its toxin) which causes (or may cause) human disease. (Sec. 173.386)   |
| RADIOACTIVE<br>MATERIAL               | 7           | Any material, or combination of materials, that spontaneously gives off ionizing radiation. It has a specific activity greater than 0.002 microcuries per gram. (Sec. 173.389 [See Sec. 173.389(a) through (l) for details])  |
| CORROSIVE<br>MATERIAL                 | 8           | Any liquid or solid that causes visible destruction or irreversible damage to human skin tissue. Also, it may be a liquid that has a severe corrosion rate on steel. [See Sec. 173.240(a) and (b) for details]  |
| ORM - OTHER<br>REGULATED<br>MATERIALS |             | (1) Any material that may pose an unreasonable risk to health and safety or property when transported in commerce; and (2) does not meet any of the definitions of the other hazard classes specified in this subpart; or (3) has been reclassified an ORM (specifically or permissively) according to this subchapter. [Sec. 173.500(a)]   |
| ORM-A                                 | 9           | A material which has an anesthetic irritating, noxious, toxic, or other similar property. If the material leaks during transportation passengers and crew would have extreme annoyance and discomfort. [Sec. 173.500(b)(1)]   |
| ORM-B                                 | 9           | A material (including a solid when wet with water) the leakage of which could cause significant damage to the vehicle transporting it. Materials meeting one or both of the following criteria are ORM-B materials: (1) Specifically designated by name in Sec. 172.101 and/or (2) a liquid substance that has a corrosion rate exceeding 0.250 inch per year (IPY) on non-clad aluminum. An acceptable test is described in NACE Standard TM-01-69. [Sec. 173.500(b)(2)] |
| ORM-C                                 | 9           | A material which has other inherent characteristics not described as an ORM-A or ORM-B. It is unsuitable for shipment, unless properly identified and prepared for transportation. Each ORM-C material is specifically named in Sec. 172.101. [Sec. 173.500(b)(3)]  |
| ORM-D                                 | 9           | A material such as a consumer commodity which presents a limited hazard during transportation due to its form, quantity and packaging. They must be materials for which exceptions are provided in Sec. 172.101. A shipping description applicable to ORM-D material is found in Sec. 172.101. [Sec. 173.500(b)(4)]   |
| ORM-E                                 | 9           | A material that is not included in any other hazard class, but is subject to the requirements of this subchapter. Materials in this class include (1) HAZARDOUS WASTE and (2) HAZARDOUS SUBSTANCE, as defined in Sec. 171.8 [Sec. 173.500(b)(5)]  |

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**THE FOLLOWING ARE OFFERED TO EXPLAIN SOME OF THE ADDITIONAL TERMS USED IN PREPARATION OF HAZARDOUS MATERIALS FOR SHIPMENT. (Sec. 171.8)**

| <b>DOT TERM</b>                                    | <b>EXPLANATION</b>   |
|--|--|
| CONSUMER COMMODITY<br>(See ORM-D on previous page) | A material that is packaged or distributed in a form intended and suitable for sale through retail sales-type agencies. The material is for use by individuals for personal care or household use. This term also includes drugs and medicines. (Sec. 171.8)   |
| FLASH POINT  | The minimum temperature at which the flammable vapors of a substance (in contact with a spark or flame) will ignite. For liquids, see Sec. 173.115.  |
| FORBIDDEN  | Material is prohibited from being offered or accepted for transportation. This prohibition <u>does not</u> apply if these materials are diluted, stabilized, or incorporated in <u>devices</u> AND they are classed in accordance with Sec. 172.101(d)(1).   |
| HAZARDOUS SUBSTANCE                                | For transportation purposes, a material (and its mixtures or solutions) that is identified by the letter "E" in Column (1) of the Hazardous Materials Table, Sec. 172.101. The quantity of the material transported in one package (or in one transport vehicle, if not packaged) must equal or exceed the reportable quantity (RQ).   |
| HAZARDOUS WASTE                                    | Any material that is (1) subject to the hazardous waste manifest requirements of the Environmental Protection Agency specified in the CFR, Title 40, Parts 262; or (2) would-be-subject to these requirements (in the absence of an interim authorization to a State) see Title 40, CFR, Part 123, Subpart F; Sec. 171.8. Questions regarding EPA hazardous waste regulations, call Toll Free (800) 424-9065 or in Washington: 554-1404. |
| LIMITED QUANTITY                                   | The maximum amount of a hazardous material authorized for specific labeling and packaging exceptions. Consult the sections applicable to the particular hazard class. See Sec. 173.118, 173.118(a), 173.153, 173.244, 173.306, 173.345, 173.364 and 173.391.   |
| REPORTABLE QUANTITY                                | The quantity of hazardous substance specified in the Hazardous Materials Table (Sec. 172.101). Reportable Quantity is identified by the letter "RQ" in Column (2). (Sec. 171.8)  |

**\*THIS HANDOUT IS DESIGNED AS A TRAINING AID FOR ALL INTERESTED PARTIES WHO MAY BECOME INVOLVED WITH HAZARDOUS MATERIALS. IT DOES NOT RELIEVE PERSONS FROM COMPLYING WITH THE DEPARTMENT OF TRANSPORTATION'S HAZARDOUS MATERIALS REGULATIONS. SPECIFIC CRITERIA FOR HAZARD CLASSES AND RELATED DEFINITIONS ARE FOUND IN THE CODE OF FEDERAL REGULATIONS (CFR), TITLE 49, PARTS 100-177.**

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US Department  
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Administration

## GUIDE FOR

CHEM OP 30.55 Exhibit 9  
9/15/85 9/15/85

# HAZARDOUS MATERIALS SHIPPING PAPERS

**USE OF GUIDE** - This Guide is designed for in-house use when reviewing hazardous materials shipping paper requirements. It does not relieve persons from complying with the Department of Transportation Hazardous Materials Regulations. Final authority for use of shipping papers is found in the Code of Federal Regulations, Title 49, Parts 100-177.

## I. DEFINITIONS

- A. SHIPPING PAPER - (Sec. 171.8) A shipping paper may be a shipping order, bill of lading, manifest, or other shipping document serving a similar purpose. It must contain the information required by Sec. 172.202, 172.203 and 172.204.
- B. HAZARDOUS WASTE MANIFEST - (CFR, Title 40, Sec. 262.20) A hazardous waste manifest is a document (shipping paper) on which all hazardous waste is identified. A copy of the manifest must accompany each shipment of waste from the point of pick-up to the destination. (CFR, Title 49, Sec. 172.205).

2. SHIPPER'S RESPONSIBILITY - (Sec. 172.200(a) ) The shipper, when offering a hazardous material for transport has the responsibility to properly prepare the shipping paper.  
**NOTE:** For shipments of hazardous waste, the hazardous waste manifest is the only authorized documentation. (CFR, Title 40, Sec. 262.23).

3. HAZARDOUS MATERIALS DESCRIPTION - (Sec. 172.202) The shipping description of a hazardous material on a shipping paper must include the following information:

- A. Proper shipping name - MAY NOT BE ABBREVIATED (Sec. 172.101 or Sec. 172.102).
- B. The hazard class of the material; (See exceptions Sec. 172.202(a)(2) ).
- C. The identification number for the material (preceded by "UN" or "NA" as appropriate); and
- D. Except for empty packagings, the total quantity (by weight, volume, or as otherwise appropriate) of that hazardous material.
- E. Except as otherwise provided in the regulations, the basic description must be in the sequence shown in Table 172.101. For example "Acetone, Flammable Liquefied, UN1090."
- F. The total quantity of the material covered by one description must appear before or after (or both before and after) the basic description.
  - (1) Abbreviations may be used to specify the type of packaging, weight or volume. Example: "40 Cyl. Nitrogen Nonflammable gas UN 1066, 800 pounds"; "1 box Cement liquid, n.o.s., Flammable liquid, NA1133, 25 lbs."
  - (2) Type of packaging and destination marks may be entered in any appropriate manner before or after the basic description.
- G. Technical and chemical group names may be entered in parentheses between the proper shipping name and hazard class. Example: Corrosive liquid, n.o.s. (capryl chloride), corrosive material.

4. GENERAL ENTRIES ON SHIPPING PAPERS - (Sec. 172.201)

- A. CONTENTS When describing a hazardous material on the shipping paper(s), that description must conform to the following requirements:

- (1) When a hazardous material and other materials are both described on the same shipping paper, the hazardous material description entries:
  - a. Must be entered first (See Figure 1), or
  - b. Must be entered in a contrasting color (or highlighted in a contrasting color) or
  - c. Must be identified by the entry "X" placed before the proper shipping name in a column captioned "HM". The "X" may be replaced by "RQ" (Reportable Quantity), if appropriate See Figure 1.

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**BASIC DESCRIPTION**

Type of Packagings May Be Abbreviated If Used.

Proper Shipping Name

Hazard Class

Total Quantity

Identification Number

|    | DESCRIPTION AND CLASSIFICATION           | TOTAL QUANTITY | WEIGHT | RATE | CHARGES |
|----|--|----------------|--------|------|---------|
| 10 | Drum, Gasoline, Flammable Liquid, UN1203 | 4500 lbs.      |        |      |         |
| 40 | Cyl. Nitrogen, Non-Flammable Gas, UN1066 | 800 lbs.       |        |      |         |
| 1  | Drum, Flammable Solid, n.s.s., UN1325    | 452 lbs.       |        |      |         |
| 4  | Boxes, Advertising Material, Paper, NOI  | 60 lbs.        |        |      |         |
| 1  | Roll, Paper Printing, Newspaper          | 690 lbs.       |        |      |         |
| 12 | Sets, Carbon Paper                       | 22 lbs.        |        |      |         |

NEW ADDRESS

COD

CERTIFICATION

HAZARDOUS MATERIALS ENTRIES LISTED FIRST

**BASIC DESCRIPTION**

Type of Packagings May Be Abbreviated If Used.

Proper Shipping Name

Hazard Class

Total Quantity

Identification Number

|    | DESCRIPTION AND CLASSIFICATION            | TOTAL QUANTITY | WEIGHT | RATE | CHARGES |
|----|---|----------------|--------|------|---------|
| 10 | Drums, Gasoline, Flammable Liquid, UN1203 | 4500 lbs.      |        |      |         |
| 4  | Boxes, Advertising Material, Paper, NOI   | 60 lbs.        |        |      |         |
| 1  | Drum, Flammable Solid, N.O.S., UN1325     | 452 lbs.       |        |      |         |
| 12 | Sets, Carbon Paper                        | 22 lbs.        |        |      |         |
| 40 | Cyl. Nitrogen, Non-Flammable Gas, UN1066  | 800 lbs.       |        |      |         |

NEW ADDRESS

COD

CERTIFICATION

HM Entries-Contrasting Colors

Note: Reproduction of a shipping paper may be highlighted by a highlighting pen rather than printed in a contrasting color.

HAZARDOUS MATERIALS ENTRIES-CONTRASTING COLOR

**BASIC DESCRIPTION**

Hazardous Materials HM Column

Type of Packagings May Be Abbreviated If Used.

Proper Shipping Name

Hazard Class

Total Quantity

Identification Number

|    | HM | DESCRIPTION AND CLASSIFICATION              | TOTAL QUANTITY | WEIGHT | RATE | CHARGES |
|----|----|---|----------------|--------|------|---------|
| 4  |    | Boxes, Advertising Materials, Paper, N.O.I. | 60 lbs.        |        |      |         |
| 10 | X  | Drums, Gasoline, Flammable Liquid, UN1203   | 4500 lbs.      |        |      |         |
| 1  | X  | Drum, Flammable Solid, n.s.s., UN1325       | 452 lbs.       |        |      |         |
| 12 |    | Sets, Carbon paper                          | 22 lbs.        |        |      |         |
| 40 | X  | Cyl. Nitrogen, Nonflammable Gas, UN1066     | 800 lbs.       |        |      |         |
| 1  |    | Roll, Paper, Printing, Newspaper            | 690 lbs.       |        |      |         |

NEW ADDRESS

COD

CERTIFICATION

HAZARDOUS MATERIALS PREFIXED BY "X" IN HM COLUMN

FIGURE 1. HAZARDOUS MATERIALS LISTED ON SHIPPING PAPERS

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- (2) The required shipping description on the original shipping paper and all copies must be legible and printed (manually or mechanically) in English.
- (3) Unless it is specifically authorized or required, the required shipping description may NOT contain any code or abbreviation.

NOTE: UN=United Nations; NA=North American.

- (4) A shipping paper may contain additional information concerning the material provided the information is not inconsistent with the required description. The additional information must be placed after the basic description required by Sec. 172.202(a).  
Exceptions:

- a. When appropriate, the entries "IMO" or "IMO Class" may be entered immediately before or immediately following the class entry in the basic description.
  - b. If a material meets the definition of more-than-one-hazard-class, the additional hazard class(es) may be entered after the hazard class in the basic description.
- NOTE: IMO International Maritime Organization.

- B. NAME OF SHIPPER A shipping paper for a shipment by water must contain the name of the shipper.

#### 5. ADDITIONAL DESCRIPTION REQUIREMENTS (Sec. 172.203) (ALL MODES)

- A. Exemptions - Each shipping paper issued in connection with a shipment made under an exemption must bear the notation "DOT-E" followed by the exemption number assigned (Example: DOT-E4648). Place the exemption number adjacent to the description to which the exemption applies.
- B. Limited Quantities - Descriptions for materials defined as "Limited Quantities"...must include the words "Limited Quantities" or "Ltd. Qty." following the basic description.
- C. Hazardous Substances
  - (1) If the proper shipping name (for a mixture or solution that is a hazardous substance) does not identify the constituents making it a hazardous substance, the name or names of such constituents shall be entered in association with the basic description.
  - (2) The letters "RQ" (Reportable Quantity) shall be entered on the shipping paper either before or after the basic description required by Sec. 172.202 for each hazardous substance. (See definition Sec. 171.8) Example: RQ, Cresol, Corrosive Material, NA2076; or Adipic Acid, ORM-E, NA9077, RQ.
- D. Radioactive Materials - For additional description for radioactive materials, refer to Sec. 172.203(d).
- E. Empty Packaging - For an empty packaging that still contains a residue of a hazardous material
  - (1) The description on the shipping paper may include the word(s) "EMPTY" or "EMPTY: Last Contained (Name of Substance with the basic description of that hazardous material).
  - (2) For empty tank cars, see Sec. 174.25(c).
  - (3) If a packaging, including a tank car, contains a residue that is a hazardous SUBSTANCE the description on the shipping paper shall be prefaced with the phrase "EMPTY: Last Contained (Name of Substance)" and shall have "RQ" entered before or after the basic description.
- F. Dangerous When Wet - Packages requiring the label "Dangerous When Wet" shall have the words "Dangerous When Wet" entered on the shipping paper adjacent to the basic description.
- G. Poisonous Materials - Regardless of the class to which a material is assigned:
  - (1) The name of the compound or principal constituent that causes the material to meet the definition of a poison and the proper shipping name shall be entered on the shipping paper adjacent to shipping description for the material.
  - (2) The name of the compound or principal constituent may be either a technical name or any name for the material that is listed in the NIOSH Registry. (Registry of Toxic Effects of Chemical Substances, 1978 Edition) Sec. 172.203(k).  
NOTE: For additional details, see Sec. 172.203(k).

- H. Exceptions: OTHER REGULATED MATERIAL (ORM - A, B, C, and D)
- (1) Shipping paper requirements do not apply to any material other than a hazardous waste or a hazardous substance that is:
    - a. An ORM-A, B, or C unless it is offered or intended for transportation by air or water. Then it is subject to the regulations pertaining to transportation by air or water as specified in Sec. 172.101 (Hazardous Materials Table); or
    - b. An ORM-D unless it is offered or intended for transportation by air.

MODAL REQUIREMENTS  
(ADDITIONAL INFORMATION)

NOTE: In addition to the basic requirements for shipping papers, each mode has specific requirements.

6. TRANSPORTATION BY RAIL

- A. SHIPPING PAPERS (Sec. 174.24)
- (1) Except as provided in paragraph (b) of 174.24, no person may accept for transportation by rail any regulated hazardous material unless it is accompanied by a shipping paper prepared in a manner specified in Sec. 172.200. In addition, the shipping paper must include a certificate, when required by Sec. 172.204. If the original shipping paper containing the certificate is in the originating carriers possession, no copy of the certificate is required on the train.
  - (2) This subpart does not apply to materials classed as ORM-A, B, C or D.
- B. ADDITIONAL DESCRIPTION FOR SHIPPING PAPERS (Sec. 172.203(g))
- (1) The shipping paper for a rail car containing a hazardous material must contain the notation "Placarded" followed by the name of the placard required for the rail car.
  - (2) The shipping paper for each specification DOT 112A or 114A tank car, (without head shields) containing a flammable compressed gas must contain the appropriate notation "DOT 112A" or "DOT 114A". Also it must contain either "Must be handled in accordance with FRA E.O. NO. 5" or "Shove to rest per E.O. NO. 5." For additional details, refer to Part 174.

7. TRANSPORTATION BY AIR

- A. SHIPPING PAPERS ABOARD AIRCRAFT -During transportation aboard an aircraft, the shipment must be accompanied by a copy of the shipping papers required by Sec. 175.30(a)(2).
- NOTE: The documents required (shipping papers and notification of pilot-in-command) may be combined into one document-provided it is given to the pilot-in-command before departure of the aircraft. (Sec. 175.35(b)).
- B. NOTIFICATION OF PILOT-IN-COMMAND (Sec. 175.33) - Before takeoff the operator of the aircraft shall give the pilot-in-command the following information in writing. (Sec. 175.35):
- (1) Description of hazardous material on shipping papers (Sec. 172.202 and 172.203);
  - (2) Location of the hazardous material in the aircraft; and
  - (3) The results of the inspection required by Sec. 175.30(b).
- NOTE: For additional details, refer to Part 175.

8. TRANSPORTATION BY WATER

- A. SHIPPING PAPERS (Sec. 176.24) - A carrier may not transport a hazardous material by vessel unless the material is properly described on the shipping paper. (See Part 172)
- B. CERTIFICATE (Sec. 176.27)
- (1) A carrier may not transport a hazardous material by vessel unless he has received a certificate prepared in accordance with Sec. 172.204.

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- (2) In the case of an import or export shipment of hazardous materials which will NOT be transported by rail, highway, or air, the certification may be listed on the bill of lading or other shipping paper. The shipper must certify that the hazardous materials is properly classed, described, marked, packaged and labeled according to Part 172 OR in accordance with the requirements of the IMO Code. (See Sec. 171.12).
- C. DANGEROUS CARGO MANIFEST - (Sec. 176.30) The master (or his authorized representative) of a vessel transporting hazardous materials shall prepare a dangerous cargo manifest, list, or stowage plan. This document may only include material(s) which are subject to the requirements of CFR, Title 49, or the IMO Code. This document must be kept in a designated holder on or near the vessel's bridge. (See Sec. 176.30 for details)
- D. EXEMPTIONS - (Sec. 176.31) Hazardous material may be transported by vessel under the authority of an exemption. A copy of the exemption MUST be on board the vessel. It must be kept with the dangerous cargo manifest. (see Part 176)
- E. ADDITIONAL DESCRIPTION FOR SHIPPING PAPERS - (Sec. 172.203(i))
- (1) Each shipment by water must have the following additional shipping paper entries:
- Identification of the type of packages such as barrels, drums, cylinders, and boxes.
  - The number of each type of packages-including those in freight container or on a pallet, and
  - The gross weight of each type of package OR the individual gross weight of each package.
- (2) Shipping papers accompanying "N.O.S." type hazardous materials shipped from USA by vessel to any other country must have:
- For single entry, the technical name in parenthesis after the proper shipping name. Example, Corrosive liquid, n.o.s. (caprylyl chloride), UN1780.
  - For a mixture of two or more hazardous materials - include within the parenthesis the technical names of at least two (2) of the most predominately hazardous components. Example, Flammable liquid, corrosive, n.o.s. (Methyl alcohol, Potassium hydroxide). UN2924.

## 9. TRANSPORTATION BY HIGHWAY

- A. SHIPPING PAPERS - (Sec. 177.817)
- (1) General - A carrier may not transport a hazardous material unless it is accompanied by a shipping paper prepared in accordance with Sec. 172.201, 172.202 and 172.203.
- (2) Shipper's certification - An initial carrier may not accept hazardous materials offered for transportation unless the shipping paper describing the material includes an accurate shipper's certification (Sec. 172.204). Except for a hazardous waste, the certification is not required for shipments transported entirely by private carriage nor bulk shipments transported in a cargo tank supplied by the carrier. (Sec. 177.817(b))
- (3) Changing shipments from highway to rail - When a motor carrier offers or delivers a freight container or transport vehicle to a rail carrier for further transportation, the following must be marked on the shipping paper:
- A description of the freight container or transport vehicle; and
  - The kind of placard affixed to the freight container or transport vehicle.
- (4) Accessibility of shipping papers: Each carrier and driver of the vehicle shall ensure that the shipping paper is readily available for inspection and recognizable by authorities in the case of an accident or for inspection. (See Sec. 177.817(e) for details)
- B. ADDITIONAL DESCRIPTION FOR SHIPPING PAPERS - (Sec. 172.203(h)) Additional descriptions for: Anhydrous ammonia see Sec. 172.203(h)(1); Liquefied petroleum gas, see Sec. 172.203(h)(2) and Exemptions see Sec. 172.203(a).

## 10. SHIPPER'S CERTIFICATION (Sec. 172.204)

- A. GENERAL - (Except B and D below).
- (1) Except as provided in paragraphs (b) and (c) of Sec. 172.204, each person who offers a hazardous material for transportation shall certify that the material offered for transportation is in accordance with the regulations. Print (manually or mechanically) the following statement on the shipping paper:

"This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.\*"

NOTE: The words "herein-named" may be substituted for the words "above-named".

\*NOTE: For hazardous waste shipments, the words "and the EPA" must be added to the end of the certification. (See CFR, Title 40, Sec. 262.21(b))

#### B. AIR TRANSPORTATION

- (1) General - Certification containing the following language may be used in place of the certification required by paragraph A(1) above:

*"I hereby certify that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and in proper condition for carriage by air according to applicable national governmental regulations."*

- (2) Duplicate Certificate - Each person who offers a hazardous material to an aircraft operator for transportation by air shall provide two (2) copies of the certificate. (Sec. 175.30(a)(2))

- (3) Passenger and Cargo Aircraft - If hazardous materials are offered for transportation by air, add to the certificate the following statement:

*This shipment is within the limitations prescribed for passenger/cargo-only aircraft. (delete non-applicable)*

- (4) Radioactive Material - Each person who offers any radioactive material for transportation aboard a passenger-carrying aircraft shall sign (mechanically or manually) a printed certificate. The certificate must state that the shipment contains radioactive material intended for use in, or incident to, research, medical diagnosis or treatment. (Sec. 172.204(a)(4))

NOTE: See Sec. 175.10 for exceptions.

- C. SIGNATURE - The certifications required above must be legibly signed (mechanically or manually) by a principal, officer, partner or employee of the shipper or his agent. (Sec. 172.204(d))

- D. EXCEPTIONS - Except for a hazardous waste, no certification is required for hazardous material offered for transportation by motor vehicle and transported: (Sec. 172.204(b))

- (1) In a cargo tank supplied by the carrier, or  
(2) By the shipper as a private carrier-except for a hazardous material that is to be reshipped or transferred from one carrier to another.  
(3) No certification is required for the return of an empty tank car which previously contained a hazardous material and which has not been cleaned or purged.

#### HAZARDOUS WASTE MANIFEST

The following information has been abstracted from the Code of Federal Regulations (CFR), Title 49, Part. 100-177 and CFR, Title 40, Part 262.

#### 1. DEFINITIONS

- A. HAZARDOUS WASTE MANIFEST (CFR Title 40, Sec. 262.20)

A hazardous waste manifest is a shipping document on which all hazardous wastes are identified.

- B. SHIPPING PAPER - A shipping order, bill of lading, manifest, or other shipping document serving a similar purpose and containing the information required by Sec. 172.202, 172.203 and 172.204.

#### 2. DOT HAZARDOUS MATERIALS MANIFEST REQUIREMENT (Sec. 172.205)

- A. No person may offer, transport, transfer or deliver a hazardous waste unless a hazardous waste manifest is prepared, signed, carried and given as required of that person. (Sec. 172.205(a)).

- B. The shipper (generator) must prepare the manifest in accordance with the EPA Regulations, CFR Title 40, Part 262.

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- C. The original copy of the manifest must be dated by, and bear the handwritten signature of the person representing the:
  - (1) Shipper (generator) of waste at the time it is offered for transportation, and
  - (2) Initial carrier accepting the waste for transportation.
- D. A copy of the manifest must be dated by, and bear the handwritten signature of the person representing:
  - (1) Each subsequent carrier accepting the waste for transportation, at the time of acceptance, and
  - (2) Upon receipt, the designated facility receiving the waste.
- E. A copy of the manifest bearing all required dates and signature must be:
  - (1) Given to a person representing each carrier accepting the waste for transportation,
  - (2) Carried during transportation in the same manner as required for shipping papers,
  - (3) Given to a person representing the designated facility receiving the waste,
  - (4) Returned to the shipper (generator) by the carrier that transported the waste from the United States to a foreign destination with a notation of the date of departure from the United States, and
  - (5) Retained by the shipper (generator) and by the initial and each subsequent carrier for three (3) years from the date the waste was accepted by the initial carrier. Each retained copy must bear all required signatures and dates up to and including those entered by the next person who received the waste.
- F. The requirements of Sec. 172.205(d) and E (3) above do not apply to a rail carrier when waste is delivered to a designated facility by railroad if:
  - (1) All of the information required to be entered on the manifest (except generator and carrier identification numbers and the generator's certification<sup>(A)</sup>) is entered on the shipping paper carried in accordance with Sec. 174.26(c);
  - (2) The delivering rail carrier obtains and retains a receipt for the waste that is dated by and bears the handwritten signature of the person representing the designated facility; and
  - (3) A copy of the shipping paper is retained for three (3) years by each railroad transporting the waste.
- G. The person delivering a hazardous waste to an initial rail carrier shall send a copy of the manifest, dated and signed by a representative of the rail carrier, to the person representing the designated facility.
- H. A hazardous waste manifest required by CFR, Title 40, Part 262 containing all the information required by CFR, Title 49, Subpart C shipping papers, may be used as the shipping paper.

3. THE MANIFEST-GENERAL REQUIREMENTS (Sec. 262.20)

- A. A generator (shipper) who transports, or offers for transportation, hazardous waste for off-site treatment, storage, or disposal must prepare a manifest before transporting the waste off-site.
- B. A generator (shipper) must designate on the manifest one facility which is permitted to handle the waste described on the manifest.
- C. A generator (shipper) may also designate on the manifest one alternate facility which is permitted to handle the waste in the event an emergency prevents delivery to the primary designated facility.
- D. If the transporter (carrier) is unable to deliver the waste to the designated facility, the generator must either designate another facility or instruct the transporter to return the waste.

4. MANIFEST INFORMATION (Title 40, CFR, Sec. 262.21)

- A. The manifest must contain:
  - (1) Manifest document number;
  - (2) Generator's (Shipper's) name, mailing address, telephone number, and the EPA identification number;
  - (3) Name and EPA identification number of each transporter (carrier);
  - (4) Name, address and EPA identification number of the designated facility and an alternate facility, if any;
  - (5) Description of the waste(s) (e.g. proper shipping name required by CFR, Title 49, Sec. 172.101, 172.202, and 172.203); and

- (6) Total quantity of each hazardous waste by units of weight or volume, and the type and number of containers loaded into or onto the transport vehicle.
- B. Certification (Title 40 CFR, Sec. 262.21(b)) The following certification must appear on the manifest:  
"This is to certify that the above name materials are properly classified, described, packaged, marked, labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA".
5. COPIES OF MANIFEST REQUIRED (Title 40 CFR, Sec. 262.22)  
The manifest must consist of at least the number of copies to provide the generator (shipper), each transporter (carrier) and the owner or operator of the designated facility with one copy each for their records and another copy to be returned to the owner.
6. USE OF THE MAINFEST (Title 40, CFR, Sec. 262.23)
- A. The generator must:  
(1) Sign the manifest certification by hand;  
(2) Obtain the handwritten signature of the initial transporter and date of acceptance of manifest; and  
(3) Retain one copy in accordance with Sec. 262.40(a).
- B. The generator must give the transporter the remaining copies of the manifest.
- C. Shipment of hazardous waste within the United States solely by railroad or water (bulk shipments only); the generator must send three (3) copies of the manifest dated and signed in accordance with Sec. 262.20 to the owner or operator of the designated facility.  
NOTE: Copies of the manifest are not required for each transporter. For special provisions for rail or water (bulk shipment) transporters see Title 40, CFR, Sec. 263.20(e).
7. PREPARATION OF HAZARDOUS WASTE FOR SHIPMENT (Title 40, CFR, Sec 262.30)
- A. Packaging Hazardous Waste - The generator (shipper) has the responsibility for the classification and packaging of hazardous waste prior to offering for transportation.  
NOTE: The requirements for packaging will be found in Title 49, Parts 172, 173, 178 and 179.
- B. Labeling Requirements (Sec. 262.31) - Prior to offering a hazardous waste for transportation off-site, the generator (shipper) must label each package in accordance with CFR Title 49, Part 172, Subpart E.
- C. Marking Requirements (Sec. 262.32) - Prior to offering hazardous waste for transportation off-site, the generator must mark each:  
(1) package of the hazardous waste; and  
(2) 110 gallons (or less) container offered for transportation with the following words and information: (See CFR 49, Sec. 172.304).  
"HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the United States Environmental Protection Agency"  
Generator's Name and Address \_\_\_\_\_  
Manifest Document Number \_\_\_\_\_
- D. Placarding Requirements (Sec. 262.33) - Prior to offering a hazardous waste for transportation off-site, the generator must:  
(1) Placard the shipment; or  
(2) Offer the initial transporter (carrier) the appropriate placards. (CFR Title 49, Part 172, Subpart F).

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INFORMATION SERVICES DIVISION, DMT-11  
OFFICE OF OPERATIONS AND ENFORCEMENT  
MATERIALS TRANSPORTATION BUREAU  
DEPARTMENT OF TRANSPORTATION  
WASHINGTON, D.C. 20590

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**McKesson**  
**Operations**

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**GENERAL**

McKesson Chemical Company, as an interstate shipper and a shipper of regulated hazardous chemicals, is closely governed in its activities by the Department of Transportation. This section is concerned with recordkeeping and the maintenance of DOT records.

DOT states that certain records be retained at the "principal place of business" unless written permission is obtained to keep these records at a home office or regional office.

McKesson has applied for and received on behalf of its several companies permission to retain such records at locations other than the Service Centers. Certain records for McKesson Chemical Company are to be retained at the regional office by the Regional Operations Manager. (See DOT approval letter, Exhibit 1.) The balance of DOT required records are to be maintained at the Service Center.

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## Operations

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### REGIONAL RECORDS

NOTE: Sections are those referred to in DOT approval letter.

#### A. Sec. 391.51 Driver Qualification Files

##### § 391.51 Driver qualification files.

(a) Each motor carrier shall maintain a driver qualification file for each driver it employs. A driver's qualification file may be combined with his personnel file.

(b) The qualification file for a driver who has been a regularly employed driver of the motor carrier for a continuous period which began before January 1, 1971, must include--

(1) The medical examiner's certificate of his physical qualification to drive a motor vehicle or a legible photographic copy of the certificate;

(2) The Director's letter granting a waiver of a physical disqualification, if a waiver was issued under § 391.49;

(3) The note relating to the annual review of his driving record required by § 391.25.

(4) The list or certificate relating to violations of motor vehicle laws and ordinances required by § 391.27; and

(5) Any other matter which relates to the driver's qualifications or ability to drive a motor vehicle safely.

(c) The qualification file for a regularly employed driver who has not been regularly employed by the motor carrier for a continuous period which began before January 1, 1971, must include--

(1) The documents specified in paragraph (b) of this section.

(2) The driver's application for employment completed in accordance with § 391.21;

(3) The responses of State agencies and past employers to the motor carrier's inquiries concerning the driver's driving record and employment pursuant to § 391.23;

(4) The certificate of driver's road test issued to the driver pursuant to § 391.31 (e), or a copy of the license or certificate which the motor carrier accepted as equivalent to the driver's road test pursuant to § 391.33; and

(5) The questions asked, the answers the driver gave, and the certificate of written examination issued to him pursuant to § 391.35, or a copy of a certificate which the motor carrier accepted as equivalent to a written examination pursuant to § 391.37.

(d) The qualification file for an intermittent, casual, or occasional driver employed under the rules in § 391.63 must include--

(1) The medical examiner's certificate of his physical qualification to drive a motor vehicle or a legible photographic copy of the certificate;

(2) The certificate of driver's road test issued to the driver pursuant to § 391.31 (e), or a copy of the license or certificate which the motor carrier accepted as equivalent to the driver's road test pursuant to § 391.31;

(3) The questions asked, the answers the driver gave, and the certificate of written examination issued to him pursuant to § 391.35, or a copy of a certificate which the motor carrier accepted as equivalent to a written examination pursuant to § 391.37; and

(4) The driver's name, his social security number, and the identification number, type, and issuing State of his motor vehicle operator's license.

(e) A using carrier's qualification file for a driver who is regularly employed by another motor carrier, and who is employed by the using carrier in accordance with § 391.65 of this part, shall include a copy of a certificate, as prescribed by § 391.65(n)(2) of this part, by the regularly employing carrier that the driver is fully qualified to drive a motor vehicle.

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# McKesson Operations

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## REGIONAL RECORDS (Cont.)

### B. Sec. 395.8 Driver's Daily Log

#### § 395.8 Driver's daily log.

(a) Except as provided in Section 395.9 and in paragraph (t) of this section, every motor carrier shall require that a driver's daily log, Form MCS-59 set forth below, shall be made in duplicate by every driver used by him or it and every driver who operates a motor vehicle shall make such a log. Failure to make logs, failure to make required entries therein, falsification of entries, or failure to preserve logs shall make both the driver and the carrier liable to prosecution. Driver's logs shall be prepared and retained in accordance with the provisions of paragraphs (b) through (s) of this section.

(t) *Exemptions (1) 100-mile-radius drivers.* A driver is exempt from the requirements of this section if—

(i) The driver does not operate beyond the 100-mile radius of the work reporting location more than one time in any 7 consecutive day period;

(ii) The driver, except a driver salesperson, returns to the work reporting location within 12 hours;

(iii) At least 8 consecutive hours off-duty separate each 12 hours on duty; and

(iv) The motor carrier which employs the driver maintains and retains for a period of 1 year accurate and true records showing—

(A) The total number of hours the driver is on duty each day;

(B) The time the driver reports for duty each day;

(C) The time the driver is released from duty each day; and

(D) The total on-duty time for the preceding 7 days in accordance with paragraph (r) of this section for drivers used for the first time or intermittently.

## SERVICE CENTER RECORDS

C. Sec. 177.824 (also 173.33) Qualification; maintenance and use of cargo tanks. (Original certificates should be retained at the Regional Office, copies retained at Service Center.)

D. Sec. 395.8—Drivers' logs through calendar month. (See retention schedule below.)

E. Sec. 396.3—Inspection, repairs, and maintenance records.

F. Sec. 396.11—Vehicle inspection report by driver.

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SERVICE  
CENTER  
RECORDS  
(Cont.)

G. Sec. 171.16 Detailed Hazardous Materials Incident Reports.

§ 171.16 Detailed hazardous materials incident reports.

(a) Each carrier who transports hazardous materials shall report in writing in duplicate on DOT Form F 5800.1 to the Department within 15 days of the date of discovery, each incident that occurs during the course of transportation (including loading, unloading, or temporary storage) in which, as a direct result of the hazardous materials, any of the circumstances set forth in § 171.15(a) occurs or there has been an unintentional release of hazardous materials from a package (including a tank).

(A copy of DOT Form F5800.1 follows this section as Exhibit 2. Copy Regional and Area Operations Managers.)

(b) Each carrier making a report under this section shall send that report to the Chief, Information Systems Division, Transportation Programs Bureau, Department of Transportation, Washington, D.C. 20590.

Hazardous Materials Incident Report (Form DOT F5800.1) (Exhibit 2)

This report should be completed at the service center and forwarded to Corporate Traffic Department in San Francisco. The report must be filed within 15 days; therefore, if time does not allow sending it to Corporate Traffic for their filing the report within 15 days, it should be filed directly with Agency and address shown above. In this event, forward a copy of the report to Corporate Traffic informing them that the report has been filed directly by the Service Center. Send D. A. Davis, Vice President Operations & Materials Management, Home Office, Regional Office and Area Office a copy of each report.

H. Sec. 173.34 Cylinder test and repair records.

I. Sec. 177.824 (also 173.33) Qualification, maintenance and use of cargo tanks (copies of certificates should be retained at Service Center).

Driver's Equipment Compliance Check (Form MCS 63)

The original copy of this form is given to the driver at the time of a Federal inspection. Driver must turn in

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# McKesson Operations

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## SERVICE CENTER RECORDS (Cont.)

form to Service Center Operations Managers/Assistant upon his return to Service Center. The necessary repairs must be made immediately and prior to any further operation of the vehicle. The "Certification of Repairman" on the reverse side of the form must be completed and the original copy forwarded to the Agency as shown thereon. A legible copy of the completed form is to be sent to D. A. Davis, Vice President Operations & Materials Management, Home Office, Region Office, and the Area Office (make copies from the original).

### Notice of Apparent Violation (Applicable State Form)

The name of the form may vary by state. Each state has its own form which is used by its State Investigators/Inspectors. As with Federal inspections, a copy is given to the driver and should be returned to the Service Center. Required repairs should be made, and legible copies forwarded to D. A. Davis, Vice President Operations & Materials Management, Home Office, Region Office and the Area Office. If a warning/citation is issued, forward with a cover letter explaining the details and action taken.

All other normal records which might be required, such as shipping papers, bills of lading, tachograph charts, special exemptions, etc.

## RETENTION PERIOD

(Refer to Alphabetical Index Above)

- A. Sec. 391.51 - Retain as long as driver is employed, plus 3 years thereafter. Three years after the date of execution, the following may be removed from the driver's qualification files:
  1. The medical examiner's certificate.
  2. The note relating to the annual review of his driving record.
  3. The list or certificate relating to violations of motor vehicle laws and ordinances.

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**McKesson**  
**Operations**

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RETENTION  
PERIOD  
(Cont.)

4. The letter issued granting a waiver of a physical disqualification.
- B. Sec. 395.8 - Driver retains copies of logs in his possession while on duty for 30 days. Logs for each calendar month retained at Service Center until 20th day of succeeding calendar month, then sent to region. Region retains for 6 months from date of receipt.
- C. Sec. 177.824 - Retain for two years after inspection or maintenance. (Visual inspection required every two years following original manufacture date.)
- D. Sec. 395.8 - See "B" above.
- E. Sec. 396.3 - Retain for one year and for six months after vehicle leaves the company control.
- F. Sec. 396.11 - Retain at least three months from the date the report was prepared.
- G. Sec. 171.16 - Retention period not required.
- H. Sec. 173.34 - Records showing the results of reinspection and retest must be kept by the owner or his authorized agent until either expiration of the retest period, or until the cylinder is again reinspected or retested, whichever occurs first.
- I. Sec. 177.824 - See "B" above.

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CHEM OP 30.60 Exhibit 1  
3/10/86 3/10/86  
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U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
REGION NINE

Office of Motor Carrier Safety  
211 Main Street, Room 1108 January 23, 1986  
San Francisco, California 94105

ARIZONA  
CALIFORNIA  
NEVADA  
HAWAII  
GUAM  
AMERICAN SAMOA

IN REPLY REFER TO

HMC-09

Mr. John Harold  
Manager, Procurement & Transportation  
McKesson Corporation  
One Post Street  
San Francisco, CA 94105

RECEIVED  
CORPORATE TRANSPORTATION

FEB 12 1986

JOHN R. HAROLD

Dear Mr. Harold:

McKesson Corporation is authorized to maintain Drivers' Qualification Records, and Drivers' Records of Duty Status at the following locations for McKesson Drug & Health Care Group -

| <u>Record Retention</u><br><u>Location</u>               | <u>Also Records For</u>  |
|--|--|
| 2323 N. 27th Avenue<br>Phoenix, AZ 85009                 |  |
| 1401 East 26th Street<br>Little Rock, AR 72206           | Fort Smith, Arkansas   |
| 14500 East 30th Avenue<br>Aurora, CO 80011               | Billings, Montana<br>Las Vegas, Nevada<br>Salt Lake City, Utah |
| 280 Dividend Road<br>Rocky Hill, CT 06067                |  |
| Johnson Drug Co.<br>5420 West Cypress<br>Tampa, FL 33623 |  |
| 955 Industrial Court<br>Norcross, GA 30071               | Columbus, Georgia  |
| 1355 Enterprise Drive<br>Romeoville, IL 60441            | Cedar Rapids, Iowa<br>Wichita, Kansas                          |
| 9 Aegean Drive<br>Methuen, MA 01844                      |  |
| 14100 Oakland Avenue<br>Highland Park, MI 48203          |  |

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3230 Spruce Street.  
St Paul, MN 55117

Milwaukee, Wisconsin

2125 TV Road  
Jackson, MS 39204

2825 South 3rd Street  
St. Louis, MO 63118

Kansas City, Missouri

100 McKesson Parkway  
Cheektowaga, NY 14225

Albany, New York

311 Northland Blvd.  
Cincinnati, OH 45246

North Canton, Ohio  
Pittsburg, Pennsylvania  
Huntington, West Virginia

2120 Commerce Drive  
Cayce, SC 29171

1887 Latham Street  
Memphis, TN 38106

Louisville, Kentucky

809 110th Street  
Arlington, TX 76011

Amarillo, Texas  
El Paso, Texas  
Houston, Texas

North 2611 Woodruff Road  
Spokane, WA 99206

Wilsonville, Oregon

McKesson Wine & Spirits Company

Churchill Distributors  
4601 Hollins Ferry Road  
Baltimore, MD 21227

McKesson Wine & Spirits Co.  
1420 Kleppe Lane  
Sparks, NV 89431

In addition to the above authorization you are being authorized to retain manufacturer's certificates and retest reports as required by 49 CFR 177.814 at the following locations for McKesson Chemical Company.

Central Regional Office  
600 Hunter Drive  
Oak Brook, IL 60521

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MKIL189528

Eastern Region  
Camp Croft Industrial Park  
Drawer 2169  
Old Union Road  
Spartanburg, SC 29302

Western Region  
10100 Pioneer Blvd.  
Suite 300  
Santa Fe Springs, CA 90670

This permission is granted subject to the following conditions:  
Maintenance of a current list of all drivers at your principal  
office location.

Sufficient records must be on file at the locations specified to  
fulfill the requirements of Sections 391.51 and 395.8 of the  
Federal Motor Carrier Safety Regulations. Supportive documents  
such as payroll, dispatching and driver expense records must be  
maintained at those locations to verify the accuracy of drivers'  
records of duty status. In addition, you will be required to  
establish an internal monitoring system to assure compliance with  
these requirements.

Failure to comply with the Federal Motor Carrier Safety  
Regulations, the Hazardous Materials Regulations or the  
conditions contained herein will result in immediate revocation  
of this authority. Such revocation will be in addition to any  
other administrative or enforcement actions taken for  
noncompliance with applicable regulations.

All Prior approvals are void.

Sincerely yours,



Harold E. Whitaker  
Regional Director, Office of  
Motor Carrier Safety

cc: HMC-01  
HMC-03  
HMC-04  
HMC-05  
HMC-06  
HMC-07  
HMC-08  
HMC-010  
HMC-CA

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MKIL189529

# GUIDE

## Hazardous Materials Incident Reports

for preparing

**for preparing**

**GUIDE**

DEPARTMENT OF TRANSPORTATION Form Approved OMB No. 04-5017

### HAZARDOUS MATERIALS INCIDENT REPORT

INSTRUCTIONS: Submit this report in duplicate to the Secretary, Hazardous Materials Regulations Board, Type Council of Transportation, Washington, D.C. 20590, (ATTN: The Board). If space provided for use is inadequate, complete this form under Section II "Remarks", leaving to the only matter being completed. Copies of this form, in limited quantities, may be obtained from the Secretary, Hazardous Materials Regulations Board. Additional copies in this presentation format may be obtained from the Board in the same size and kind of paper.

|                                      |  |
|--------------------------------------|--|
| 1. CLIENT                            |  |
| 2. TYPE OF OPERATOR                  |  |
| 3. NAME OF INDIVIDUAL                |  |
| 4. TYPE OF VEHICLE OR                |  |
| 5. SHIPMENT INFORMATION              |  |
| 6. DAMAGE AND ADDRESS                |  |
| 7. SHIPPING PAPER IDENTIFICATION NO. |  |
| 8. DEATHS, INJURIES, LOSS AMOUNT     |  |
| 9. DAMAGE PERIOD (IN)                |  |
| 10. ESTIMATED TOTAL                  |  |
| 11. HAZARDOUS MATERIAL               |  |
| 12. NATURE OF DAMAGE                 |  |
| 13. DAMAGE BY OTHER FREIGHT          |  |
| 14. CORROSION OR RUST                |  |
| 15. FAILURE OF INNER                 |  |
| 16. BODY OR BDE FAILURE              |  |
| 17. OTHER CONDITIONS (LEAKAGE)       |  |
| 18. SPACE FOR DOT USE ONLY           |  |

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## PREFACE

The Hazardous Material Incident Reporting System was established in 1971 to meet the requirements of the Hazardous Materials Control Act of 1970. This reporting system is required to comply with the Hazardous Materials Transportation Act of 1974 (Title I, Public Law 93-933).

The regulations requiring reporting of hazardous materials incidents are contained in the Code of Federal Regulations, viz:

Title 49, Transportation, Parts 100 to 199 (Governing the transport of hazardous materials by rail, air, water, and highway)  
Sec. 171.15 Immediate notice of certain hazardous materials incidents  
Sec. 171.16 Detailed hazardous materials incident reports  
Sec. 171.17 Hazardous substance discharge notification  
NOTE: See Sec. 174.45 (Rail), 175.45 (Air), 176.48 (Water), and 177.807 (Highway)

\*\*\*\*\*

This reporting system is two-fold in that an immediate telephone notice is required under certain conditions and a detailed written report is required whenever there is any unintentional release of a hazardous material during transportation or temporary storage related to transportation. The same reporting system applies to any quantity of hazardous waste and reportable quantities of hazardous substances discharged during transportation. See 49 CFR 171.15, 171.16, 171.17 for details.

\*\*\*\*\*

The carrier must submit a report on Form DOT F 5800.1 within 15 days from the date of the incident. While carriers are required to report, any interested party may report. In order to include all pertinent information, other reporting parties are encouraged to also utilize this form. Two copies of the report must be submitted to the Department. NOTE: Typewritten reports are preferred.

The success of this program depends greatly on the quality of the information submitted on the report. Generally, most of this required information is available at the time of the incident, but since leaking and damaged containers are destroyed and spills are cleaned up, some investigation is often necessary in order to obtain all of the facts. Much of this information is also required by carriers for other purposes: insurance records, damage claims, etc. In view of this, carriers may find it to their advantage to incorporate reporting requirements into standard company procedures, thereby making the needed details for the report more readily available and enabling the company to more easily comply with the reporting regulations. PURPOSE: This guide is intended to assist carriers in completing the report form by providing examples of the information needed. However, many reports remain incomplete. Additional information relating to containers, container markings, container specifications, labels, definitions, etc. is available from the Materials Transportation Bureau. Please contact us for assistance.

A limited supply of the report form is available upon request in writing. Larger quantities may be obtained from several industry sources who have reproduced the form for this purpose, or you may reproduce the form yourself. (A blank report form is provided on the last two pages of this guide for this purpose).

Incident reports should now be addressed to: U.S. Department of Transportation Materials Transportation Bureau, ATTN: DMT-412, Washington, D.C. 20590.

# INSTRUCTIONS

FILL IN ALL BLANKS. Use N/A when not applicable. If there are none, state "No markings on container," "No label applied," "No symbols," "No serial numbers," etc. as the case may be.

## SECTION A: INCIDENT

If item A 1.1 through A 1.5 do not apply, insert at 6 your operational area: Manufacturer, Warehouse, etc. For items A2 and A3, if the actual date and location are not known, give the date and location of discovery. Do not include terms such as "on trailer 376" or "between New York and Philadelphia".

| HAZARDOUS MATERIALS INCIDENT REPORT   |  |  |
|---|--|--|
| <p><b>INSTRUCTIONS:</b> Submit this report in duplicate to the Director, Office of Program Support, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590, (ATTN: DMT-412). If space provided for any item is inadequate, complete that item under Section H, "Remarks", keying to the entry number being completed. Copies of this form, in limited quantities, may be obtained from the Director, Office of Program Support. Additional copies in this prescribed format may be reproduced and used, if on the same size and kind of paper.</p> |  |  |
| <b>A INCIDENT</b>   |  |  |
| <p>1. TYPE OF OPERATION<br/> <input type="checkbox"/> AIR <input checked="" type="checkbox"/> HIGHWAY <input type="checkbox"/> RAIL <input type="checkbox"/> WATER <input type="checkbox"/> FREIGHT <input type="checkbox"/> OTHER<br/> <input type="checkbox"/> FORWARDER <input type="checkbox"/> (Identify) _____</p>  |  |  |
| <p>2. DATE AND TIME OF INCIDENT (Month - Day - Year)<br/>           March 7, 1972 11:30 a.m.<br/>           p.m.</p>  |  | <p>3. LOCATION OF INCIDENT<br/>           Exit 3 on I-495 near Alexandria, Va.</p> |

## SECTION B: REPORTING CARRIER, COMPANY OR INDIVIDUAL

Item B4 should indicate the complete company name. Do not use abbreviations. If the report is submitted by someone other than the carrier involved in the incident, please indicate your connection with the incident such as "J & J Chemicals--Consignee" and identify the carrier. Item B5 should be the main office address of the company, not the terminal preparing the report. Item B6 should specify the type of vehicle or facility in which the unintentional release took place: tank car, van trailer, trailer on flat car (TOFC), storage warehouse, etc.

|  |   |
|--|---|
| <b>B REPORTING CARRIER, COMPANY OR INDIVIDUAL</b>                          |   |
| <p>4. FULL NAME<br/>           ABC Trucking Company, Inc.</p>              | <p>5. ADDRESS (Number, Street, City, State and Zip Code)<br/>           204 Post Avenue<br/>           Fayetteville, North Carolina 28301</p> |
| <p>6. TYPE OF VEHICLE OR FACILITY<br/>           Tractor - Van Trailer</p> |   |

## SECTION C: SHIPMENT INFORMATION

Items C7 and C8 should include the complete company name, "Scientific Div. - AHS" does not, by itself, identify the shipper or consignee although it may be completely obvious to the reporter as "American Hotel Supply". The street address and zip code should also be included. Item C9 should clearly identify the shipping papers. A series of numbers without any identification is not very meaningful. An example of "Other" in item C10 would be the broker or agent of the shipper on an import shipment.

|   |   |
|---|---|
| <b>C SHIPMENT INFORMATION</b>   |   |
| <p>7. NAME AND ADDRESS OF SHIPPER (Origin address)<br/>           XYZ Chemical Company<br/>           1101 South Peachtree Street<br/>           Atlanta, Ga. 30303</p> | <p>8. NAME AND ADDRESS OF CONSIGNEE (Destination address)<br/>           J &amp; J Chemicals<br/>           1506 Wayne Street<br/>           Alexandria, Va. 22301</p>      |
| <p>9. SHIPPING PAPER IDENTIFICATION NO.<br/>           Shipper's B/L: FNC 12345<br/>           Carrier's Pro: 98765</p>   | <p>10. SHIPPING PAPERS ISSUED BY<br/> <input checked="" type="checkbox"/> CARRIER <input type="checkbox"/> SHIPPER<br/> <input type="checkbox"/> OTHER (Identify) _____</p> |

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#### SECTION D: DEATHS, INJURIES, LOSS AND DAMAGE

For items D11 and D12 enter the number of persons injured or killed AS A RESULT OF THE HAZARDOUS MATERIALS INVOLVED. If a casualty resulted from a collision and not from the release of a hazardous material, then "none" should be entered. If the exact amounts for items D13 and D14 are not known, give an estimate. Do not leave these spaces blank.

| D DEATHS, INJURIES, LOSS AND DAMAGE                          |                           |  |
|--|---------------------------|--|
| DUE TO HAZARDOUS MATERIALS INVOLVED                          |                           | 13. ESTIMATED AMOUNT OF LOSS AND/OR PROPERTY DAMAGE INCLUDING COST OF DECONTAMINATION (Round off in dollars) |
| 11. NUMBER PERSONS INJURED                                   | 12. NUMBER PERSONS KILLED |  |
| -1-  | -0-                       |  |
| 14. ESTIMATED TOTAL QUANTITY OF HAZARDOUS MATERIALS RELEASED |                           | \$1,000.00   |
| 45 gals.   |                           |  |

#### SECTION E: HAZARDOUS MATERIALS INVOLVED

In item E15 enter the hazard class of the commodity as shown in the hazardous materials table. The shipping name in E16 MUST be one of the names shown in the commodity list of the hazardous materials regulations mentioned in the PREFACE.

This may or may not be the same name used for rate or billing purposes. Nevertheless, the regulations are quite specific as to a commodity's proper hazardous material shipping name. In item E17 enter the trade name if any.

| E HAZARDOUS MATERIALS INVOLVED              |  |                |
|---|--|----------------|
| 15. HAZARD CLASS<br>(*Sec. 172.101, Col. 3) | 16. SHIPPING NAME<br>(*Sec. 172.101, Col. 2) | 17. TRADE NAME |
| Flammable liquid                            | Waste Acetone                                | None           |

#### SECTION F: NATURE OF PACKAGING FAILURE

In item F18 check all spaces which may have contributed to the package failure. An "External Puncture" may have been caused by "Other Conditions" such as a traffic collision. Do not make any mark in item 19.

| F NATURE OF PACKAGING FAILURE                |   |                                   |
|--|---|-----------------------------------|
| 18. (Check all applicable boxes)             |   |                                   |
| (1) DROPPED IN HANDLING                      | (2) EXTERNAL PUNCTURE                                   | (3) DAMAGE BY OTHER FREIGHT       |
| (4) WATER DAMAGE                             | (5) DAMAGE FROM OTHER LIQUID                            | (6) FREEZING                      |
| (7) EXTERNAL HEAT                            | (8) INTERNAL PRESSURE                                   | (9) CORROSION OR RUST             |
| (10) DEFECTIVE FITTINGS, VALVES, OR CLOSURES | (11) LOOSE FITTINGS, VALVES OR CLOSURES                 | (12) FAILURE OF INNER RECEPTACLES |
| (13) BOTTOM FAILURE                          | (14) BODY OR SIDE FAILURE                               | (15) WELD FAILURE                 |
| (16) CHIME FAILURE                           | X (17) OTHER CONDITIONS (Identify)<br>Traffic Collision | 19. SPACE FOR DOT USE ONLY        |

Form DOT F 5800.1 (10-70) (9/1/76)  
\*Editorial change to incorporate redesignation per HM-112.

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# SECTION G: PACKAGING INFORMATION

Columns #1, #2, and #3 may be used to convey a variety of information. You may report details of three different types of containers from which hazardous materials escaped, or three containers of the same type but of different capacities, or three containers of the same type and size but made by three different container manufacturers. In the example below, Columns #1 and #2 have been used to separate the details of inner and outer containers. If Columns #1, #2, and #3 are not adequate, a separate sheet may be attached to the report, or you may utilize the space in the "Remarks".

Additional examples for G20 are "Carboys" and "Fiberboard Box" and for G21, the capacity of a tank trailer or tank car. G22 and G23--In the example below, the report clearly indicates that hazardous materials escaped from 1 drum and 1 liner out of 72 lined drums in the shipment. When the inner and outer containers are of a different capacity or nomenclature, the report should clearly state. For example: 2 glass bottles out of 4 glass bottles in a carton were broken. If there were 10 such cartons in the shipment, then the report should state that hazardous materials escaped from 2 bottles out of 40 bottles in the shipment and from 1 carton out of 10 cartons. There should be no doubt that the 40 bottles were the inner containers of 10 outer containers in one shipment.

In G24 show all of the markings related to the container. "12B" is not the complete marking for a fiberboard box. It should be "12B40", or "12B60", etc. If the container bears no DOT specification marking, enter "NONE" in the space. DO NOT leave G24 blank.

G25 - The hazardous materials regulations also require additional markings in some cases, such as: "HIGH EXPLOSIVES - DANGEROUS" or "HANDLE CAREFULLY".

G26 - Enter the name of the container manufacturer. Keep in mind that some manufacturers use initials, abbreviations, symbols and combinations of letters and symbols.

G27 - Enter the serial number of a cylinder, cargo tank, tank car or portable tank. The serial number of a cylinder appears just below the cylinder neck. A tank car serial number might be similar to "GUTX 98765".

G28 - Enter "Flammable Liquid", "Compressed Gas", etc. If no label appears on the package, state "NONE".

G29A - Include symbols and registration numbers e.g. R 1000, M 1000, etc.

G29B - Show periodic test dates for containers which require same (e.g. cylinders, tank vehicles, reconditioned drums).

G30 - Include DOT Exemption Numbers (e.g. DOT E 9999).

| G PACKAGING INFORMATION - If more than one size or type packaging is involved in loss of material show packaging information separately for each. If more space is needed, use Section H "Remarks" below referring to the item number. |   |   |                          |    |
|--|---|---|--------------------------|----|
| ITEM   |   | #1  | #2                       | #3 |
| 20   | TYPE OF PACKAGING INCLUDING INNER RECEPTACLES (Steel drums, wooden boxes, cylinders, etc.)  | (Inner)<br>Plastic Liner  | (Outer)<br>Steel Drum    |    |
| 21   | CAPACITY OR WEIGHT PER UNIT (55 gallons, 65 lbs., etc.)                                     | 55 gals.  | 55 gals.                 |    |
| 22   | NUMBER OF PACKAGES FROM WHICH MATERIAL ESCAPED  | 1   | 1                        |    |
| 23   | NUMBER OF PACKAGES OF SAME TYPE IN SHIPMENT   | 72  | 72                       |    |
| 24   | DOT SPECIFICATION NUMBER(S) ON PACKAGES (21P, 17E, 3AA, etc., or none)                      | DOT 25L   | DOT 17H                  |    |
| 25   | SHOW ALL OTHER DOT PACKAGING MARKINGS (Part 17B)  | 55-12-71  | STC<br>18/16-55-70       |    |
| 26   | NAME, SYMBOL, OR REGISTRATION NUMBER OF PACKAGING MANUFACTURER                              | AAA   | FUBAR                    |    |
| 27   | SHOW SERIAL NUMBER OF CYLINDERS, CARGO TANKS, TANK CARS, PORTABLE TANKS                     | N/A   | N/A                      |    |
| 28   | TYPE DOT LABEL(S) APPLIED   | N/A   | Corrosive Liquid         |    |
| 29   | IF RECONDITIONED OR<br>OR<br>REQUALIFIED, SHOW  | A REGISTRATION NO. OR SYMBOL<br>N/A<br>B DATE OF LAST TEST OF INSPECTION<br>N/A | DOT R1000<br>Tested 2/72 |    |
| 30   | IF SHIPMENT IS UNDER DOT OR USCG SPECIAL PERMIT OR EXEMPTION, ENTER PERMIT OR EXEMPTION NO. | None  | None                     |    |

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## SECTION H: REMARKS

In addition to the information requested following "Remarks" on the form, this section should be used to include any information which the reporter feels is pertinent. For instance, if there was a spill of a flammable liquid and the driver was burned, and you did not indicate "fire" in F17 (Other Conditions), then Section H should clearly explain that there was a fire involving the flammable cargo, the origin of the fire, etc. In instances of contamination of a vehicle or freight, the method of decontamination and disposition of the contaminated freight should be explained. Estimate the quantity of hazardous waste removed from the scene, the name and address of the facility to which it was taken and the manner of disposition of any unremoved waste. Estimate the quantity of hazardous substance removed from the scene and the manner of disposition of any unremoved hazardous substance. (See Sec. 171.16 (a)(1) and (2))

H REMARKS. Describe essential facts of incident including but not limited to defects, damage, probable cause, stowage, action taken at the time discovered, and action taken to prevent future incidents. Include any recommendations to improve packaging, handling, or transportation of hazardous materials. Photographs and diagrams should be submitted when necessary for clarification.

### EXAMPLES OF:

- HAZARDOUS MATERIAL - Our vehicle was involved in a minor traffic accident which caused the load to shift and puncture one of the drums. The leaking drum was removed by the consignee to their disposal area and buried. The vehicle was taken to our Alexandria terminal and cleaned (washed down and steamed). A Highway Patrolman on the scene had some of the spilled liquid splash on his hand. He was taken to a local hospital where he was treated and released.
- HAZARDOUS WASTE - Five hundred gallons of waste acetone were removed from the ruptured cargo tank and sent to our Brooklyn terminal at 1005 Flatbush Ave., N.Y., N.Y. for disposition. All waste acetone was removed from the scene.
- HAZARDOUS SUBSTANCE - One thousand five hundred pounds (681 kilograms) of styrene monomer, inhibited were removed from the ruptured tank car and pumped into another tank car. The hazardous substance was sent to out disposal site in Jersey City, N.J. All spilled styrene monomer was cleaned up and removed for disposal.

|  |   |
|--|---|
| 31. NAME OF PERSON PREPARING REPORT (Type or print)<br>Ira Jeopard | 32. SIGNATURE                             |
| 33. TELEPHONE NO. (Include Area Code)<br>(202) 143-0510            | 34. DATE REPORT PREPARED<br>June 15, 1980 |

NOTE: This report cancels the report formerly required by Section 177.814. It DOES NOT REPLACE other required reports such as the accident report MCS-50 required by the Federal Highway Administration. This material may be reproduced without special permission from this office.

MKIL40534

MK094944

## DEPARTMENT OF TRANSPORTATION

Form Approved OMB No. 04-5613

## HAZARDOUS MATERIALS INCIDENT REPORT

**INSTRUCTIONS:** Submit this report in duplicate to the Director, Office of Program Support, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590, (ATTN: DMT-412). If space provided for any item is inadequate, complete that item under Section H, "Remarks", keying to the entry number being completed. Copies of this form, in limited quantities, may be obtained from the Director, Office of Program Support. Additional copies in this prescribed format may be reproduced and used, if on the same size and kind of paper.

|   |   |   |
|---|---|---|
| <b>A INCIDENT</b>   |   |   |
| 1. TYPE OF OPERATION<br>1 <input type="checkbox"/> AIR 2 <input type="checkbox"/> HIGHWAY 3 <input type="checkbox"/> RAIL 4 <input type="checkbox"/> WATER 5 <input type="checkbox"/> FREIGHT FORWARDER 6 <input type="checkbox"/> OTHER (Identify) _____ |   |   |
| 2. DATE AND TIME OF INCIDENT (Month - Day - Year)<br>_____.<br>_____ a.m.<br>_____ p.m.   |   | 3. LOCATION OF INCIDENT<br>_____  |
| <b>B REPORTING CARRIER, COMPANY OR INDIVIDUAL</b>   |   |   |
| 4. FULL NAME<br>_____   |   | 5. ADDRESS (Number, Street, City, State and Zip Code)<br>_____  |
| 6. TYPE OF VEHICLE OR FACILITY<br>_____   |   |   |
| <b>C SHIPMENT INFORMATION</b>   |   |   |
| 7. NAME AND ADDRESS OF SHIPPER (Origin address)<br>_____  |   | 8. NAME AND ADDRESS OF CONSIGNEE (Destination address)<br>_____   |
| 9. SHIPPING PAPER IDENTIFICATION NO.<br>_____   |   | 10. SHIPPING PAPERS ISSUED BY<br><input type="checkbox"/> CARRIER <input type="checkbox"/> SHIPPER<br><input type="checkbox"/> OTHER (Identify) _____ |
| <b>D DEATHS, INJURIES, LOSS AND DAMAGE</b>  |   |   |
| DUE TO HAZARDOUS MATERIALS INVOLVED   |   | 13. ESTIMATED AMOUNT OF LOSS AND, OR PROPERTY DAMAGE INCLUDING COST OF DECONTAMINATION (Round off in dollars)<br>\$ _____                             |
| 11. NUMBER PERSONS INJURED<br>_____   | 12. NUMBER PERSONS KILLED<br>_____                    |   |
| 14. ESTIMATED TOTAL QUANTITY OF HAZARDOUS MATERIALS RELEASED<br>_____   |   |   |
| <b>E HAZARDOUS MATERIALS INVOLVED</b>   |   |   |
| 15. HAZARD CLASS<br>(*Sec. 172.101, Col. 3)<br>_____  | 16. SHIPPING NAME<br>(*Sec. 172.101, Col. 2)<br>_____ | 17. TRADE NAME<br>_____   |
| <b>F NATURE OF PACKAGING FAILURE</b>  |   |   |
| 18. (Check all applicable boxes)  |   |   |
| (1) DROPPED IN HANDLING   | (2) EXTERNAL PUNCTURE                                 | (3) DAMAGE BY OTHER FREIGHT   |
| (4) WATER DAMAGE  | (5) DAMAGE FROM OTHER LIQUID                          | (6) FREEZING  |
| (7) EXTERNAL HEAT   | (8) INTERNAL PRESSURE                                 | (9) CORROSION OR RUST   |
| (10) DEFECTIVE FITTINGS, VALVES, OR CLOSURES  | (11) LOOSE FITTINGS, VALVES OR CLOSURES               | (12) FAILURE OF INNER RECEPTACLES   |
| (13) BOTTOM FAILURE   | (14) BODY OR SIDE FAILURE                             | (15) WELD FAILURE   |
| (16) CHIME FAILURE  | (17) OTHER CONDITIONS (Identify)<br>_____             | 19. SPACE FOR DOT USE ONLY  |

Form DOT F 5800.1 (10-70) (9/1/76)

\*Editorial change to incorporate redesignation per NM-112.

MK094945

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MKIL189536

| G. PACKAGING INFORMATION - If more than one size or type packaging is involved in loss of material show packaging information separately for each. If more space is needed, use Section H "Remarks" below keying to the item number.   |   |    |                                 |    |
|--|---|----|---------------------------------|----|
| ITEM   |   | #1 | #2                              | #3 |
| 20   | TYPE OF PACKAGING INCLUDING INNER RECEPTACLES (Steel drums, wooden box, cylinder, etc.) |    |                                 |    |
| 21   | CAPACITY OR WEIGHT PER UNIT (55 gallons, 65 lbs., etc.)                                 |    |                                 |    |
| 22   | NUMBER OF PACKAGES FROM WHICH MATERIAL ESCAPED  |    |                                 |    |
| 23   | NUMBER OF PACKAGES OF SAME TYPE IN SHIPMENT   |    |                                 |    |
| 24   | DOT SPECIFICATION NUMBER(S) ON PACKAGES (21P, 17E, 3AA, etc., or none)                  |    |                                 |    |
| 25   | SHOW ALL OTHER DOT PACKAGING MARKINGS (Part 178)  |    |                                 |    |
| 26   | NAME, SYMBOL, OR REGISTRATION NUMBER OF PACKAGING MANUFACTURER                          |    |                                 |    |
| 27   | SHOW SERIAL NUMBER OF CYLINDERS, CARGO TANKS, TANK CARS, PORTABLE TANKS                 |    |                                 |    |
| 28   | TYPE DOT LABEL(S) APPLIED   |    |                                 |    |
| 29   | IF RECONDITIONED<br>OR<br>REQUALIFIED, SHOW   | A  | REGISTRATION NO. OR SYMBOL      |    |
|  |   | B  | DATE OF LAST TEST OF INSPECTION |    |
| 30   | IF SHIPMENT IS UNDER DOT OR USCG SPECIAL PERMIT, ENTER PERMIT NO.                       |    |                                 |    |
| H. REMARKS - Describe essential facts of incident including but not limited to defects, damage, probable cause, stowage, action taken at the time discovered, and action taken to prevent future incidents. Include any recommendations to improve packaging, handling, or transportation of hazardous materials. Photographs and diagrams should be submitted when necessary for clarification. |   |    |                                 |    |
|  |   |    |                                 |    |
| 31. NAME OF PERSON PREPARING REPORT (Type or print)  |   |    | 32. SIGNATURE                   |    |
| 33. TELEPHONE NO. (Include Area Code)  |   |    | 34. DATE REPORT PREPARED        |    |

MKIL40536

**McKesson**  
**Operations**

| Section                              | Reference  | Page           | End |
|--------------------------------------|------------|----------------|-----|
| TRANSPORTATION                       | 30.61      | 1              | X   |
| Subject                              | Issue Date | Effective Date |     |
| DOT MOTOR CARRIER ACCIDENT REPORTING | 6/30/86    | 6/30/86        |     |

REPORTING  
OF  
ACCIDENTS

In connection with the memorandum reproduced below, a copy of DOT Form MCS 50-T referred to therein and guide for preparing same follow this subject as Exhibits 1 and 2. Note that the property damage threshold on reportable accidents has risen from \$2,000 to \$4,000.

To Stu Braznell  
Bob Castello  
Dick Davis  
Charles Garcia  
Joe Goldblum  
Doug Johnston  
Joe Murphy  
From Don Wakefield  
John Harold

Date April 17, 1986

Location/Tel. 8/8560

Subject Accidental Reporting  
Department of Transportation

Copies To D. Thompson  
A. Weiner  
A. Pearce  
B. Arms

**McKesson**  
Intra Company  
Correspondence

In order to cut paperwork by reducing the number of accidents reported, DOT has raised the property damage threshold on reportable accidents from \$2,000 to \$4,200.

Additionally, rules for reporting accidents involving bodily injury have been modified so that injury accidents are reportable only when a person immediately receives medical treatment away from the scene of the accident (at a hospital, for example). This change was made to reduce the confusion arising when an injured person requires medical treatment some time after an accident occurs and to eliminate reporting of accidents where injuries are not serious enough to warrant immediate treatment away from the scene.

The MCS-50T accident report form remains unchanged, and DOT says that, even though the last revision was in 1973, their Guide for Preparing Carrier Accident Reports will probably not be reprinted to reflect these new rules due to budget cuts.

A copy of the federal register detailing these changes is attached for your information.

JRH/dt

Att.

P.S. Those of you who have responsibility for multiple units should make sure they are advised of this reporting change. Also, those of you who have Operations Manuals which include D.O.T. reporting requirements should update them to reflect this change.

MKIL40537

MK094947

MKIL189538

| U.S. DEPARTMENT OF TRANSPORTATION<br>FEDERAL HIGHWAY ADMINISTRATION<br>BUREAU OF MOTOR CARRIER SAFETY   |   |   | MOTOR CARRIER ACCIDENT REPORT   |  |   |
|---|---|---|---|--|---|
| Original and two copies of MCS 50-T shall be filed with the Director, Regional Motor Carrier Safety Office, FHWA, as required by 394.9. Copy shall be retained in carrier's file. Circle or (X) appropriate boxes below.  |   |   |   |  |   |
| 1. Name of carrier (Corporate business name)<br>(7-21)  |   |   | 2. Principal Address (Street and no., City, State, ZIP Code.)<br>(22-50)  |  |   |
| 3. Type of carrier (51-66)<br><input checked="" type="checkbox"/> Private, Employer ID No. (IRS) _____<br><input type="checkbox"/> ICC authorized, MC _____<br><input type="checkbox"/> Other (Specify) _____ Employer ID No. (IRS) _____   |   |   |   |  |   |
| 4. Type of trip (67)<br><input checked="" type="checkbox"/> Over-the-road<br><input type="checkbox"/> Local pick-up and delivery operation  |   |   |   |  |   |
| 5. Place accident occurred (Nearest Town or City, State)<br>(68-78)   |   |   | 5A. Type of district (79)<br><input checked="" type="checkbox"/> Residential<br><input type="checkbox"/> Rural<br><input type="checkbox"/> Primarily business |  |   |
| 6. Street or highway (Route or Name)<br>(7-16)  |   |   | 6A. Location if off highway<br>(17-26)  |  |   |
| 7. Day of week (27)<br><input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W<br><input type="checkbox"/> TH <input type="checkbox"/> F <input type="checkbox"/> S <input type="checkbox"/> S  |   | 8. Date accident occurred (28-33)<br>____/____/____ |   | 9. Time accident occurred (Military time to nearest hour)<br>(34-35) |   |
| 10. ACCIDENT TYPE (Primary Event)   |   |   |   |  |   |
| 10A. Collision (Check appropriate box) (36)<br><input checked="" type="checkbox"/> Not applicable<br><input type="checkbox"/> Collision with moving object<br><input type="checkbox"/> Collision with fixed or parked object  |   |   |   |  |   |
| 10B. Collision (Check other object involved) (37-45)<br><input checked="" type="checkbox"/> Not applicable<br><input type="checkbox"/> Commercial truck<br><input type="checkbox"/> Fixed object<br><input type="checkbox"/> Automobile<br><input type="checkbox"/> Pedestrian<br><input type="checkbox"/> Bus<br><input type="checkbox"/> Train<br><input type="checkbox"/> Bicyclist<br><input type="checkbox"/> Animal<br><input type="checkbox"/> Motorcycle<br><input checked="" type="checkbox"/> Other (Specify) _____                                   |   |   |   |  |   |
| 10C. Collision with another vehicle—Accident Classification (Check appropriate box) (46-48) <span style="float: right;">zzz <input type="checkbox"/> not applicable</span>  |   |   |   |  |   |
| (46-48) VEHICLES  |   | ACTION  |   | (46-48) VEHICLES   |   |
|   | 1 | 2   | 3   |  | 1   |
| A   |   |   |   | L  |   |
| B   |   |   |   | M  |   |
| C   |   |   |   | N  |   |
| D   |   |   |   | O  |   |
| E   |   |   |   | P  |   |
| F   |   |   |   | Q  |   |
| G   |   |   |   | R  |   |
| H   |   |   |   | S  |   |
| I   |   |   |   | T  |   |
| J   |   |   |   | U  |   |
| K   |   |   |   | V  |   |
| Slowing—Stopping  |   |   | Intersection  |  |   |
| Stopped   |   |   | Passing   |  |   |
| Parked  |   |   | Changing Lanes  |  |   |
| Rear-end  |   |   | Sideswipe—Opposite Direction  |  |   |
| Backing   |   |   | Head-On—Crossed Into Opposing Lane  |  |   |
| Making Right Turn   |   |   | Skidding  |  |   |
| Making Left Turn  |   |   | Vehicle Out-Of-Control  |  |   |
| Making U-Turn   |   |   | Roll-Away   |  |   |
| Proceeding Straight   |   |   | Controlled Railroad Crossing  |  |   |
| Merging   |   |   | Uncontrolled Railroad Crossing  |  |   |
| Entering Traffic From Shoulder, Median, Parking Strip or Private Drive  |   |   | Other (Specify) _____   |  |   |
| 10D. Non-collision (Check primary event) (49-57)<br><input checked="" type="checkbox"/> Not applicable<br><input type="checkbox"/> Ran off road<br><input type="checkbox"/> Jackknife<br><input type="checkbox"/> Overturn<br><input type="checkbox"/> Separation of units<br><input type="checkbox"/> Fire<br><input type="checkbox"/> Loss or spillage of cargo<br><input type="checkbox"/> Cargo shift<br><input type="checkbox"/> Other (Specify) _____   |   |   |   |  |   |
| 10E. If not primary event, did accident result in (58)<br><input checked="" type="checkbox"/> Not applicable<br><input type="checkbox"/> Spillage of hazardous cargo<br><input type="checkbox"/> Spillage of non-hazardous cargo<br><input type="checkbox"/> Fire<br><input type="checkbox"/> Explosion   |   |   |   |  |   |
| 11. DRIVER INFORMATION  |   |   |   |  |   |
| 11A. Name of your driver (59-72)  |   |   | 11B. Age (73-74)  |  | 11C. Social Security No. (7-15) _____/____/____ |
| 11D. How long employed as your driver (To nearest year)<br>(16-17)  |   |   |   |  |   |
| 11E. Hours actually driving since last period of 8 consecutive hours off duty (18)<br><input checked="" type="checkbox"/> 1 hr. <input type="checkbox"/> 2 hrs. <input type="checkbox"/> 3 hrs. <input type="checkbox"/> 4 hrs. <input type="checkbox"/> 5 hrs. <input type="checkbox"/> 6 hrs. <input type="checkbox"/> 7 hrs. <input type="checkbox"/> 8 hrs. <input type="checkbox"/> 9 hrs. <input type="checkbox"/> 10 hrs. <input checked="" type="checkbox"/> 11-12 hrs. <input type="checkbox"/> Not applicable   |   |   |   |  |   |
| 11F. Estimated hours of driving for entire trip or portion of trip, since last period of 8 consecutive hours off duty (19)<br><input checked="" type="checkbox"/> 1 hr. <input type="checkbox"/> 2 hrs. <input type="checkbox"/> 3 hrs. <input type="checkbox"/> 4 hrs. <input type="checkbox"/> 5 hrs. <input type="checkbox"/> 6 hrs. <input type="checkbox"/> 7 hrs. <input type="checkbox"/> 8 hrs. <input type="checkbox"/> 9 hrs. <input type="checkbox"/> 10 hrs. <input checked="" type="checkbox"/> 11-12 hrs. <input type="checkbox"/> Not applicable |   |   |   |  |   |
| 11G. Condition of driver (20-28)<br><input checked="" type="checkbox"/> Apparently normal<br><input type="checkbox"/> Sick<br><input type="checkbox"/> Had been drinking<br><input type="checkbox"/> Dozed at wheel<br><input type="checkbox"/> Medical waiver<br><input type="checkbox"/> Other (Specify) _____  |   |   |   |  |   |
| 11H. Date of last medical certificate (29-34) _____/____/____   |   |   |   |  |   |

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CHEM OP. 30.61 Exhibit 1  
6/30/86 6/30/86  
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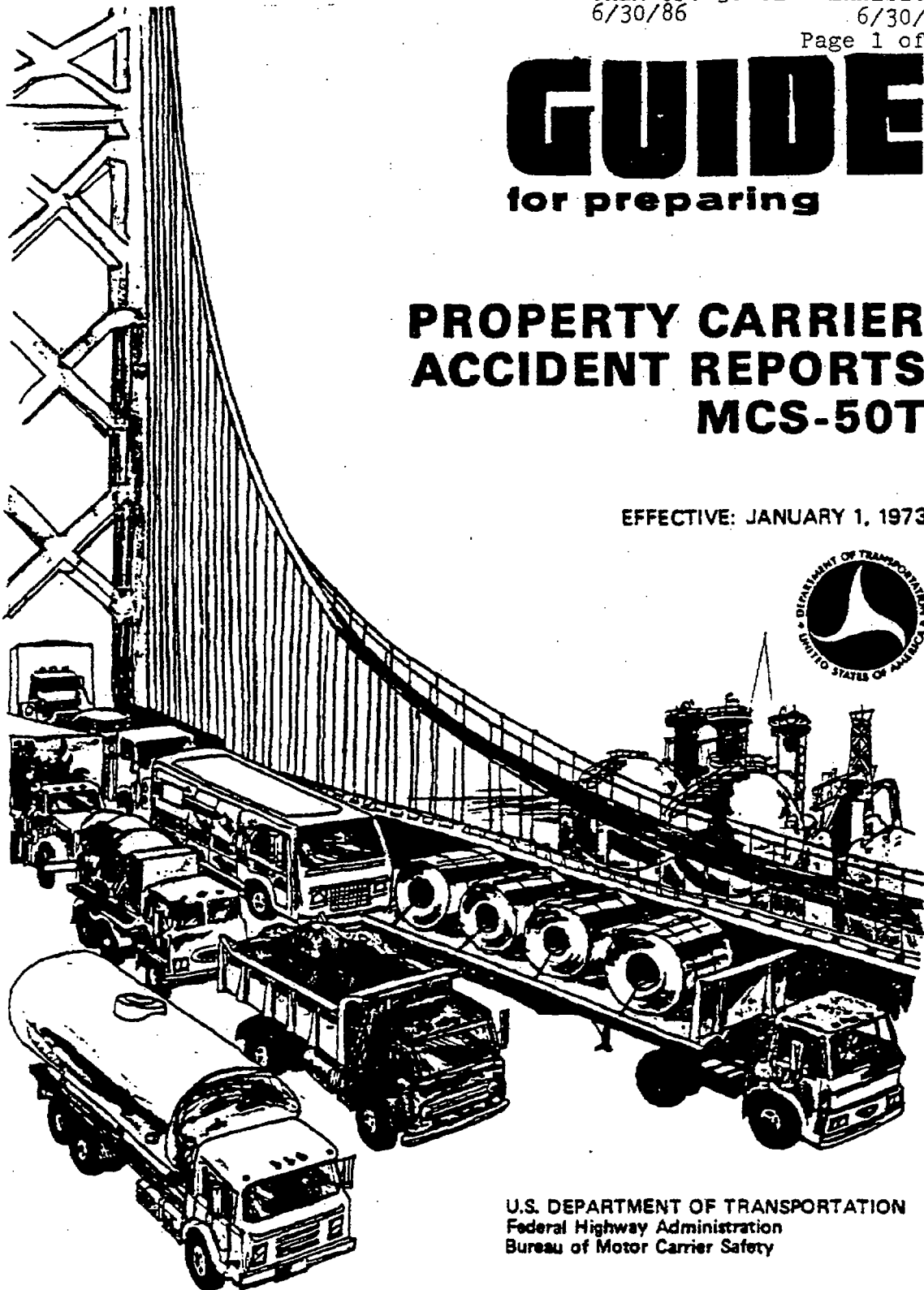
| 12. CARRIER'S VEHICLE(S)   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
|--|-----------------|---|--|---|-------------------------------------|--|-------------------------------------|----------------------|-----------------|--------------------|
|  |                 |   |  |   |                                     | TYPE OF BODY (70-74)   |                                     |                      |                 |                    |
| Type<br>(33-39)  | Year<br>(40-41) | No. of<br>Axles<br>(42-43)  | Make<br>(44-53)  | Model<br>No.<br>(54-63)   | Company<br>No.<br>(64-68)           | Van  | Flat                                | Tank                 | Auto<br>Carrier | Other<br>(Specify) |
| A Truck  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| B Tractor  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| C Semi-trailer   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| D Full trailer   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| E Full trailer (2nd)   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| F Other<br>(Specify) _____   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 13. Total length of vehicle/comb.<br>(7-9) Ft.   |                 | 13A. Total width of vehicle or cargo<br>(10-11) Ft.   |  |   | 13B. Weight (cargo)<br>(12-17) Lbs. |  | 13C. Weight (gross)<br>(18-23) Lbs. |                      |                 |                    |
| 14. Type of fuel <input type="checkbox"/> A Gasoline <input type="checkbox"/> B Diesel <input type="checkbox"/> C L.P.G. <input type="checkbox"/> D Other (Specify) _____ (24-29)  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 15. Cargo at time of accident (Your vehicle)<br><input type="checkbox"/> A Hazardous materials in cargo (Specify classification) _____ <input type="checkbox"/> B Non-hazardous materials in cargo (30-38)   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 16. Check one of the following as principal type of cargo<br><input type="checkbox"/> A General freight <input type="checkbox"/> B Household goods or uncrated furniture/fixtures <input type="checkbox"/> C Metal: Coils, sheets, rods, plates, etc. <input type="checkbox"/> D Heavy machinery or other large objects <input type="checkbox"/> E Motor vehicles <input type="checkbox"/> F Driveway-towaway <input type="checkbox"/> G Gases in bulk <input type="checkbox"/> H Solids in bulk <input type="checkbox"/> I Liquids in bulk <input type="checkbox"/> J Explosives <input type="checkbox"/> K Logs, poles, lumber <input type="checkbox"/> L Empty <input type="checkbox"/> M Refrigerated foods <input type="checkbox"/> N Mobile home (39-44) <input type="checkbox"/> O Farm products <input type="checkbox"/> P Other (Specify) _____ |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 17. Was your driver killed?<br>(45) <input type="checkbox"/> A Yes <input type="checkbox"/> B No   |                 | 17A. Was driver injured?<br>(46) <input type="checkbox"/> A Yes <input type="checkbox"/> B No |  | 17B. Was your relief driver killed?<br>(47) <input type="checkbox"/> A Yes <input type="checkbox"/> B No <input type="checkbox"/> C N/A |                                     | 17C. Was relief driver injured?<br>(48) <input type="checkbox"/> A Yes <input type="checkbox"/> B No <input type="checkbox"/> C N/A  |                                     |                      |                 |                    |
| 18. Number of other authorized persons in your vehicle<br>Killed _____ Injured _____ (49-50)   |                 |   |  | 18A. Number of unauthorized persons in your vehicle<br>Killed _____ Injured _____ (51-52)   |                                     |  |                                     |                      |                 |                    |
| 19. Total number of other persons killed _____ injured _____ (53-56)   |                 |   |  | 19A. Amount of total property damage in dollars \$ _____ (57-61)  |                                     |  |                                     |                      |                 |                    |
| 20. Were mechanical defects or failures apparent on your vehicle at time of accident? <input type="checkbox"/> A Yes <input type="checkbox"/> B No (62)  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 21. Check appropriate boxes (Mechanical defects or failures)<br><input type="checkbox"/> A Not applicable <input type="checkbox"/> B Steering system <input type="checkbox"/> C Driveline <input type="checkbox"/> D Lights <input type="checkbox"/> E Fuel system <input type="checkbox"/> F Suspension <input type="checkbox"/> G Engine <input type="checkbox"/> H Coupling <input type="checkbox"/> I Wheels and tires <input type="checkbox"/> J Transmission <input type="checkbox"/> K Brakes <input type="checkbox"/> L Other (Specify) _____ (63-69)  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 22. Was your vehicle equipped with seat belts? <input type="checkbox"/> A Yes <input type="checkbox"/> B No (70)   |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 23. Were seat belts in use by your driver(s) at time of accident? <input type="checkbox"/> A Yes <input type="checkbox"/> B No (71)  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 24. OTHER VEHICLES INVOLVED  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 24A. Company name or operator (Vehicle #2)   |                 |   |  | 24B. Address  |                                     |  |                                     | 24C. Type of vehicle |                 |                    |
| 24D. Company name or operator (Vehicle #3)   |                 |   |  | 24E. Address  |                                     |  |                                     | 24F. Type of vehicle |                 |                    |
| 25. Weather (7-12)<br><input type="checkbox"/> A Rain <input type="checkbox"/> C Snow <input type="checkbox"/> E Cloudy/overcast <input type="checkbox"/> B Clear <input type="checkbox"/> D Fog/Smog <input type="checkbox"/> F Sleet <input type="checkbox"/> G Other (Specify) _____  |                 |   |  |   |                                     | 25A. Light (13-18)<br><input type="checkbox"/> A Day <input type="checkbox"/> C Dawn <input type="checkbox"/> E Dusk <input type="checkbox"/> F Dark <input type="checkbox"/> B Artificial lights <input type="checkbox"/> D Other (Specify) _____ |                                     |                      |                 |                    |
| 26. Road surface (19-23)<br><input type="checkbox"/> A Dry <input type="checkbox"/> C Snowy <input type="checkbox"/> E Other <input type="checkbox"/> B Wet <input type="checkbox"/> D Icy (Specify) _____   |                 |   | 26A. Total number of lanes (24)<br><input type="checkbox"/> A One lane <input type="checkbox"/> C Three lanes <input type="checkbox"/> B Two lanes <input type="checkbox"/> D Four or more lanes |   |                                     | 26B. Type of highway (25)<br><input type="checkbox"/> A Divided <input type="checkbox"/> B Undivided   |                                     |                      |                 |                    |
| 26C. Check appropriate box <input type="checkbox"/> A Entrance ramp (Expressway) <input type="checkbox"/> B Exit ramp (Expressway) <input type="checkbox"/> C Not applicable (26)  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 27. Account of accident by carrier official  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| MKIL40539  |                 |   |  |   |                                     |  |                                     |                      |                 |                    |
| 28. Name and title of person signing report  |                 |   |  |   |                                     | 29. Signature  |                                     |                      |                 |                    |
| 30. Telephone Number<br>Area Code  |                 |   |  |   |                                     | 31. Date report submitted (27-32)  |                                     |                      |                 |                    |

# **GUIDE**

for preparing

## **PROPERTY CARRIER ACCIDENT REPORTS MCS-50T**

EFFECTIVE: JANUARY 1, 1973



U.S. DEPARTMENT OF TRANSPORTATION  
Federal Highway Administration  
Bureau of Motor Carrier Safety

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**ALL ACCIDENT REPORTS MUST BE FILED ON THE NEW MCS 50-T**  
(Revised 8-72)

Supplies of accident report forms may be purchased from the Superintendent of Documents, Washington, D.C. 20402, at the prevailing price.  
GPO Stock No. 5004-00007

*"Reportable Accident" as defined in Section 394.3 of the Motor Carrier Safety Regulations:*

(a) Except as provided in paragraph (b), the term "reportable accident" means an occurrence involving a motor vehicle engaged in the interstate, foreign, or intrastate operations of a motor carrier who is subject to the Department of Transportation Act resulting in -

- (1) The death of a human being; or
- (2) Bodily injury to a person who, as a result, receives medical treatment away from the scene of the accident; or
- (3) Total damage to all property aggregating \$2,000 or more based on actual costs or reliable estimates.

(b) The term "reportable accident" does not include -

- (1) An occurrence involving only boarding or alighting from a stationary motor vehicle; or
- (2) An occurrence involving only the loading or unloading of cargo; or
- (3) An occurrence in the course of farm-to-market agricultural transportation (as defined in § 394.5) by the motor carrier.

**INSTRUCTIONS FOR COMPLETING ACCIDENT REPORT FORM**

*All Sections are to be answered. Mark appropriate box in each Section. Record answers by circle or (x). Example:*

|                         |  |  |
|-------------------------|--|--|
| 4. Type of trip<br>(67) | <input checked="" type="radio"/> (A) Over-the-road | <input type="radio"/> (B) Local pick-up and delivery operation |
|-------------------------|--|--|

OR

|                         |  |   |
|-------------------------|--|---|
| 4. Type of trip<br>(67) | <input checked="" type="radio"/> (A) Over-the-road | <input checked="" type="radio"/> (B) Local pick up and delivery operation |
|-------------------------|--|---|

**IDENTIFICATION OF CARRIER**

Item 1: Enter complete corporate name. Do not use abbreviations.

Item 2: Enter the address of your principal place of business.

Item 3: MARK ONE BOX ONLY to indicate type of carrier. If box A is marked to indicate private carrier or box C specifying other type carrier insert Employer ID No. (IRS). If box B is marked (ICC authorized), insert MC number. ICC authorized carriers do not include IRS number.

|  |  |
|--|--|
| 1. Name of carrier (Corporate business name)<br>(7-21) Kirkland Trucking Company                             | 2. Principal Address (Street and no., City, State, ZIP Code.)<br>(22-30) 414 Ridge Road, Greenbelt, Md. 20770        |
| 3. Type of carrier<br>(51-66) <input checked="" type="checkbox"/> Private, Employer ID No. (IRS) 1-340154031 | <input checked="" type="checkbox"/> ICC authorized MC <input type="checkbox"/> Other (Specify) Employer ID No. (IRS) |

## LOCATION AND TIME OF ACCIDENT

- Item 4: If over-the-road (intercity) operations mark box A. If local pick-up and delivery operation mark box B.  
Mark one box only.
- Item 5: Identify the nearest town or city and State where accident occurred.
- Item 6 and 6A: Identify the accident location as exactly as possible.
- Item 7: Mark appropriate box to identify the day of week on which the accident occurred.
- Item 8: Indicate numerically the date of accident - month/day/year.
- Item 9: Enter the time to the nearest hour. **USE MILITARY TIME.** The comparative times are listed below:

| Ordinary Time | Military Time | Ordinary Time | Military Time | Ordinary Time  | Military Time |
|---------------|---------------|---------------|---------------|----------------|---------------|
| 1 a.m. ....   | 0100          | 9 a.m. ....   | 0900          | 5 p.m. ....    | 1700          |
| 2 a.m. ....   | 0200          | 10 a.m. ....  | 1000          | 6 p.m. ....    | 1800          |
| 3 a.m. ....   | 0300          | 11 a.m. ....  | 1100          | 7 p.m. ....    | 1900          |
| 4 a.m. ....   | 0400          | Noon .....    | 1200          | 8 p.m. ....    | 2000          |
| 5 a.m. ....   | 0500          | 1 p.m. ....   | 1300          | 9 p.m. ....    | 2100          |
| 6 a.m. ....   | 0600          | 2 p.m. ....   | 1400          | 10 p.m. ....   | 2200          |
| 7 a.m. ....   | 0700          | 3 p.m. ....   | 1500          | 11 p.m. ....   | 2300          |
| 8 a.m. ....   | 0800          | 4 p.m. ....   | 1600          | Midnight ..... | 2400          |

|   |  |  |  |
|---|--|--|--|
| 4. Type of trip <input checked="" type="checkbox"/> A Over-the-road<br>(57)   |  | <input type="checkbox"/> B Local pick-up and delivery operation  |  |
| 5. Place accident occurred (Nearest Town or City, State)<br>(63-78) Baltimore, Maryland   |  | 5A. Type of district<br>(79) <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Rural<br><input type="checkbox"/> Primarily business |  |
| 6. Street or highway (Route or Name)<br>(7-16) US 60S (one mile north of US 70 N)   |  | 6A. Location if off highway<br>(17-26) N/A   |  |
| 7. Day of week <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W<br>(27) <input type="checkbox"/> TH <input type="checkbox"/> F <input type="checkbox"/> S <input type="checkbox"/> S |  | 8. Date accident occurred<br>(28-33) 1 / 22 / 73   |  |
|   |  | 9. Time accident occurred (Military time to nearest hour)<br>(34-38) 2100  |  |

## ACCIDENT TYPE

- Item 10A: If noncollision accident, mark box A. If accident involved a collision, mark appropriate box B or C.  
Mark one box only.
- Item 10B: If noncollision, mark box A. If collision occurred, mark appropriate box to identify first or primary involved object. Mark one box only.
- Item 10C: If noncollision, mark box ZZZ. Otherwise mark appropriate box for each vehicle to identify the PRIMARY ACCIDENT CLASSIFICATION for each vehicle. Your vehicle is always identified as vehicle No. 1. Other vehicles identified as vehicles 2 or 3. If more vehicles involved, state total number in item 27. **MARK ONLY EVENT FOR EACH VEHICLE.**
- Item 10D: If accident involved a collision, mark box A. If noncollision, mark appropriate box to indicate major accident occurrence. Mark one box only.
- Item 10E: Mark appropriate box to indicate secondary occurrence. Mark one box only.

| 10. ACCIDENT TYPE (Primary Event)  |                                      |  |
|--|--------------------------------------|--|
| 10A. Collision (Check appropriate box)<br>(36) <input type="checkbox"/> A Not applicable <input checked="" type="checkbox"/> B Collision with moving object <input type="checkbox"/> C Collision with fixed or parked object |                                      |  |
| 10B. Collision (Check other object involved)<br>(37-45) <input type="checkbox"/> A Not applicable <input type="checkbox"/> E Pedestrian <input type="checkbox"/> I Animal  |                                      |  |
| <input type="checkbox"/> B Commercial truck  | <input type="checkbox"/> F Bus       | <input type="checkbox"/> J Motorcycle      |
| <input type="checkbox"/> C Fixed object  | <input type="checkbox"/> G Train     | <input type="checkbox"/> K Other (Specify) |
| <input checked="" type="checkbox"/> D Automobile   | <input type="checkbox"/> H Bicyclist |  |

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| 10C. Collision with another vehicle—Accident Classification (Check appropriate box) |   |   |   |   |   |                             |   |                                 |                         | 222 <input type="checkbox"/> not applicable |  |
|---|---|---|---|---|---|-----------------------------|---|---------------------------------|-------------------------|---|--|
| (46-48) VEHICLES  |   |   |   | ACTION  |   | (49-51) VEHICLES            |   |                                 |                         | ACTION                                      |  |
|   | 1 | 2 | 3 |   |   |                             | 1 | 2                               | 3                       |   |  |
| A   |   |   |   | Slowing—Stopping  |   | L                           |   |                                 |                         | Intersection                                |  |
| B   |   |   |   | Stopped   |   | M                           |   |                                 |                         | Passing                                     |  |
| C   |   |   |   | Parked  |   | N                           |   | X                               |                         | Changing Lanes                              |  |
| D   |   |   |   | Rear-end  |   | O                           |   |                                 |                         | Sideswipe—Opposite Direction                |  |
| E   |   |   |   | Backing   |   | P                           |   |                                 |                         | Head-On—Crossed into Opposing Lane          |  |
| F   |   |   |   | Making Right Turn   |   | Q                           |   |                                 |                         | Skidding                                    |  |
| G   |   |   |   | Making Left Turn  |   | R                           |   |                                 |                         | Vehicle Out-Of-Control                      |  |
| H   |   |   |   | Making U-Turn   |   | S                           |   |                                 |                         | Roll-Away                                   |  |
| I   | X |   |   | Proceeding Straight   |   | T                           |   |                                 |                         | Controlled Railroad Crossing                |  |
| J   |   |   |   | Merging   |   | U                           |   |                                 |                         | Uncontrolled Railroad Crossing              |  |
| K   |   |   |   | Entering Traffic From Shoulder, Median,<br>Parking Strip or Private Drive |   | V                           |   |                                 |                         | Other (Specify) _____                       |  |
| 10D. Non-collision (Check primary event)  |   |   |   |   | C | Jackknife                   | F | Fire                            | I Other (Specify) _____ |   |  |
| <input checked="" type="checkbox"/> Not applicable                                  |   |   |   |   | D | Overturn                    | G | Loss or spillage of cargo       |                         |   |  |
| (49-51) <input checked="" type="checkbox"/> Ran off road                            |   |   |   |   | E | Separation of units         | H | Cargo shift                     |                         |   |  |
| 10E. If not primary event, did accident result in                                   |   |   |   |   | S | Spillage of hazardous cargo | D | Spillage of non-hazardous cargo |                         |   |  |
| (52) <input checked="" type="checkbox"/> Not applicable                             |   |   |   |   | G | Fire                        | E | Explosion                       |                         |   |  |

## DRIVER INFORMATION

Items 11A through 11H: All items to be filled in for the driver of any vehicle under your direct control whether owned or leased. Enter name and address of the person at the wheel when the accident occurred, or who last drove the vehicle if it was stopped or parked without a driver at the time of the accident.

Item 11D: If driver employed less than 1 year, enter the figure 1. If driver working on an occasional, casual or trip lease basis, enter the figure 0. For definition of employed, see Part 391.

| 11. DRIVER INFORMATION   |                        |  |
|--|------------------------|--|
| 11A. Name of your driver<br>(59-72) Horace James Dobbs               | 11B. Age<br>(73-74) 42 | 11C. Social Security No.<br>(7-15) 198 / 48 / 2040 |
| 11D. How long employed as your driver (To nearest year)<br>(16-17) 5 |                        |  |

## HOURS OF SERVICE

Item 11E: Enter to the nearest hour the *total hours driven* (excluding on duty, not driving time) since last 8 consecutive hours off duty *until time of accident*.

When the 8-hour rest period was accumulated in *two periods* of rest in a *sleeping berth* mark the "Not Applicable" box.

Item 11F: Enter to the nearest hour the *SCHEDULED DRIVING TIME* (excluding on duty, not driving time) needed to complete the run *from beginning to scheduled destination had the accident not occurred*.  
EXAMPLE: driving time until accident occurrence — 3 hours, scheduled driving time for entire trip — 10 hours.

|   |         |          |          |          |          |          |          |          |          |           |                  |
|---|---------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|------------------|
| 11E. Hours actually driving since last period of 8 consecutive hours off duty   |         |          |          |          |          |          |          |          |          |           |                  |
| (18)  | A 1 hr. | B 2 hrs. | C 3 hrs. | D 4 hrs. | E 5 hrs. | F 6 hrs. | G 7 hrs. | H 8 hrs. | I 9 hrs. | J 10 hrs. | K 11-12 hrs.     |
|   |         |          |          |          |          |          |          |          |          |           | L Not applicable |
| 11F. Estimated hours of driving for entire trip or portion of trip, since last period of 8 consecutive hours off duty |         |          |          |          |          |          |          |          |          |           |                  |
| (19)  | A 1 hr. | B 2 hrs. | C 3 hrs. | D 4 hrs. | E 5 hrs. | F 6 hrs. | G 7 hrs. | H 8 hrs. | I 9 hrs. | J 10 hrs. | K 11-12 hrs.     |
|   |         |          |          |          |          |          |          |          |          |           | L Not applicable |

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### CONDITION OF DRIVER

Item 11G: Mark appropriate box or boxes to indicate condition of driver at time of accident.

ITEM 11H: Indicate the month/day/year of the last DOT medical certificate issued to the driver. If driver has not been physically examined within the last 2 years, enter all zeros.

|  |   |   |
|--|---|---|
| 11G. Condition of driver   |   |   |
| <input checked="" type="checkbox"/> Apparently normal<br>(20-28) <input type="checkbox"/> Sick | <input type="checkbox"/> Had been drinking<br><input type="checkbox"/> Dozed at wheel | <input type="checkbox"/> Medical waiver<br><input type="checkbox"/> Other (Specify) _____ |
| 11H. Date of last medical certificate (29-34) 8 / 7 /  |   |   |

### CARRIER'S VEHICLE(S)

Item 12: Identify your vehicle(s) involving listing each vehicle in combination. Make no entries for other vehicles involved in the accident.

Item 13: Enter total length of your vehicle or combination, including load.

Item 13A: Enter total width of your vehicle, or cargo, at widest point. Exclude mirrors.

Item 13B: Enter weight of cargo at time of accident. If vehicle was empty, enter 0.

Item 13C: Enter the total weight of your vehicle and cargo. If vehicle was empty, enter weight of empty vehicle.

Item 14: Mark appropriate box for fuel type. If vehicle was powered by liquefied natural gas, electricity, etc., mark box D and enter fuel type.

### ALL COLUMNS MUST BE COMPLETED

| 12. CARRIER'S VEHICLE(S)                      |                 |  |                 |  |                           |  |      |      |                 |                    |
|---|-----------------|--|-----------------|--|---------------------------|--|------|------|-----------------|--------------------|
| Type<br>(35-39)                               | Year<br>(40-41) | No. of<br>Axles<br>(42-43)   | Make<br>(44-53) | Model<br>No.<br>(54-63)                    | Company<br>No.<br>(64-69) | TYPE OF BODY (70-74)                       |      |      |                 |                    |
|   |                 |  |                 |  |                           | Van  | Flat | Tank | Auto<br>Carrier | Other<br>(Specify) |
| A Truck                                       |                 |  |                 |  |                           |  |      |      |                 |                    |
| B Tractor                                     | 1970            | 3  | Mack            | B-61                                       | 214                       |  |      |      |                 |                    |
| C Semi-trailer                                | 1972            | 2  | Fruehauf        | T-18                                       | 314                       | X  |      |      |                 |                    |
| D Full trailer                                |                 |  |                 |  |                           |  |      |      |                 |                    |
| E Full trailer (2nd)                          |                 |  |                 |  |                           |  |      |      |                 |                    |
| F Other<br>(Specify) _____                    |                 |  |                 |  |                           |  |      |      |                 |                    |
| 13. Total length of vehicle/comb.<br>(7-9) 55 |                 | 13A. Total width of vehicle or cargo<br>(10-11) 8  |                 | 13B. Weight (cargo)<br>(12-17) 40,000 Lbs. |                           | 13C. Weight (gross)<br>(18-23) 73,280 Lbs. |      |      |                 |                    |
| 14. Type of fuel                              |                 | A Gasoline <input checked="" type="checkbox"/> Diesel <input type="checkbox"/> L.P.G. <input type="checkbox"/> Other (Specify) _____ |                 |  |                           |  |      |      |                 |                    |

### TYPE OF CARGO

Item 15: Mark only one box. If your cargo included hazardous materials, specify the classification as described in section 172.5 of the Hazardous Materials Regulations, e.g., F.L. - Flammable Liquids; Expl. A. - Class A Explosives.

Item 16: Indicate the principal type of cargo in your vehicle at the time of the accident. If the vehicle, or any unit of a combination of vehicles, was itself the cargo being transported, mark "F." If your commodity is not listed, mark "other" and specify, e.g., petroleum products; textile; paper and paper products; leather and rubber products; lumber and wood products; food and beverages; livestock; glass and ceramic products; building materials.

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|   |   |  |
|---|---|--|
| 15. Cargo at time of accident (Your vehicle)  |   | (30-38)  |
| <input checked="" type="checkbox"/> Hazardous materials in cargo (Specify classification) |   | <input checked="" type="checkbox"/> Non-hazardous materials in cargo |
| 16. Check one of the following as principal type of cargo                                 |   |  |
| <input checked="" type="checkbox"/> General freight                                       | <input type="checkbox"/> Motor Vehicles   | <input type="checkbox"/> Liquids in bulk                             |
| <input type="checkbox"/> Household goods or uncrated furniture/fixtures                   | <input type="checkbox"/> Driveway-towaway | <input type="checkbox"/> Explosives                                  |
| <input type="checkbox"/> Metal: Coils, sheets, rods, plates, etc.                         | <input type="checkbox"/> Gases in bulk    | <input type="checkbox"/> Logs, poles, lumber                         |
| <input type="checkbox"/> Heavy machinery or other large objects                           | <input type="checkbox"/> Solids in bulk   | <input type="checkbox"/> Empty                                       |
|   |   | <input type="checkbox"/> Refrigerated foods                          |
|   |   | <input type="checkbox"/> Mobile home (39-44)                         |
|   |   | <input type="checkbox"/> Farm products                               |
|   |   | <input type="checkbox"/> Other (Specify)                             |

## RESULT OF ACCIDENT

Item 17: Mark appropriate box.

Item 17A: Mark appropriate box if driver was not killed. (Bodily injury means receiving medical treatment away from the accident scene.)

Item 17B: Mark appropriate box. If no relief driver, mark box C.

Item 17C: Mark appropriate box. If your relief driver was killed, or no relief driver, mark box C.

Items 18 and 18A: Indicate number of **OTHER** persons (do not include driver or co-driver) in your vehicle killed or injured. If no other persons other than driver or co-driver were in vehicle, enter the figure "0." For definition of authorized persons, see Part 392.60.

Item 19: Indicate the total number of all **OTHER** persons (NOT IN YOUR VEHICLE) killed or injured in the accident. Do not include those persons listed in items 18 and 18A.

|   |  |  |  |
|---|--|--|--|
| 17. Was your driver killed?<br>(45) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 17A. Was driver injured?<br>(46) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 17B. Was your relief driver killed?<br>(47) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 17C. Was relief driver injured?<br>(48) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
| 18. Number of other authorized persons in your vehicle<br>Killed <u>0</u> Injured <u>0</u><br>(49-50)   |  | 18A. Number of unauthorized persons in your vehicle<br>Killed <u>0</u> Injured <u>0</u><br>(51-52)   |  |
| 19. Total number of other persons killed <u>0</u> injured <u>0</u><br>(53-56)                           |  | 19A. Amount of total property damage in dollars \$ <u>4100</u><br>(57-61)  |  |

## MECHANICAL DEFECT OR FAILURE

Item 20: Mark either box A or B.

Item 21: If mechanical defects or failures were apparent on your vehicle at time of accident, mark the appropriate boxes. Mark each defect known to exist before the accident, brought to light by the accident itself, or discovered by investigation following the accident. Do not show breakage of sound parts which resulted from the accident. Include defects which caused the vehicle to be stopped, if the accident occurred while it was stopped.

|  |  |                                    |  |
|--|--|------------------------------------|--|
| 20. Were mechanical defects or failures apparent on your vehicle at time of accident? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (62) |  |                                    |  |
| 21. Check appropriate boxes (Mechanical defects or failures) (63-69)   |  |                                    |  |
| <input checked="" type="checkbox"/> Not applicable   | <input type="checkbox"/> Steering system | <input type="checkbox"/> Driveline | <input type="checkbox"/> Lights          |
| <input type="checkbox"/> Fuel system   | <input type="checkbox"/> Suspension      | <input type="checkbox"/> Engine    | <input type="checkbox"/> Coupling        |
| <input type="checkbox"/> Wheels and tires  | <input type="checkbox"/> Transmission    | <input type="checkbox"/> Brakes    | <input type="checkbox"/> Other (Specify) |

## SEAT BELT EQUIPMENT AND USAGE

Item 22: Mark either box A or B.

Item 23: Mark either box A or B.

|   |   |      |
|---|---|------|
| 22. Was your vehicle equipped with seat belts?                    | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | (70) |
| 23. Were seat belts in use by your driver(s) at time of accident? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | (71) |

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# OTHER VEHICLES INVOLVED

Items 24A, 24B, 24D, and 24E: If another vehicle involved in the accident was operated by a motor carrier, regardless of ownership, the name and address of that carrier should be given. If not a motor carrier, write the name and address of the person who was operating the vehicle at the time of the accident.  
Items 24C and 24F: For the type of vehicle enter general terms such as car, bus, truck or tractor-trailer.

| 24. OTHER VEHICLES INVOLVED                                   |  |                                    |
|---|--|------------------------------------|
| 24A. Company name or operator (Vehicle #2)<br>William J. Kurz | 24B. Address<br>384 Bright Dr., Silver Spring, Md. 20904 | 24C. Type of vehicle<br>Automobile |
| 24D. Company name or operator (Vehicle #3)<br>N/A             | 24E. Address<br>N/A                                      | 24F. Type of vehicle<br>N/A        |

# DRIVING CONDITIONS AND ACCOUNT OF ACCIDENT

Items 25 and 25A: Mark appropriate boxes to indicate general prevailing weather conditions and lighting conditions.  
Items 26 through 26B: Mark appropriate boxes to indicate road surface condition, number of lanes, and if the highway was divided by a median or curbing.  
Item 26C: Mark appropriate box.  
Item 27: An account of the accident containing the most reliable information to which the motor carrier has access at the time of reporting, sufficiently detailed and complete to convey an understanding of his version of the accident shall be entered under this item. This account should be continued on an extra sheet of paper if more space is needed.  
Item 28: Print or type name and title of person signing report.  
Items 29, 30 and 31: Complete appropriate entries. In item 30 include area code.

|  |  |  |  |
|--|--|--|--|
| 25. Weather (7-12)<br><input checked="" type="checkbox"/> A Rain <input type="checkbox"/> C Snow <input type="checkbox"/> E Cloudy/overcast<br><input checked="" type="checkbox"/> B Clear <input type="checkbox"/> D Fog/Smog <input type="checkbox"/> F Sleet <input type="checkbox"/> G Other (Specify) |  | 25A. Light (13-18)<br><input type="checkbox"/> A Day <input type="checkbox"/> C Dawn <input type="checkbox"/> E Dusk <input checked="" type="checkbox"/> F Dark<br><input type="checkbox"/> B Artificial lights <input type="checkbox"/> D Other (Specify) |  |
| 26. Road surface (19-23)<br><input checked="" type="checkbox"/> A Dry <input type="checkbox"/> C Snowy <input type="checkbox"/> E Other<br><input type="checkbox"/> B Wet <input type="checkbox"/> D Icy    (Specify)  |  | 26A. Total number of lanes (24)<br><input type="checkbox"/> A One lane <input checked="" type="checkbox"/> B Three lanes<br><input type="checkbox"/> C Two lanes <input type="checkbox"/> D Four or more lanes   |  |
| 26B. Type of highway (25)<br><input checked="" type="checkbox"/> A Divided <input type="checkbox"/> B Undivided  |  |  |  |
| 26C. Check appropriate box <input type="checkbox"/> A Entrance ramp (Expressway) <input type="checkbox"/> B Exit ramp (Expressway) <input checked="" type="checkbox"/> C Not applicable (26)   |  |  |  |
| 27. Account of accident by carrier official<br>Passenger car was changing lanes and did not completely clear our company's vehicle.<br>The passenger car's rear section struck the left front of the company's tractor causing damage to both vehicles and minor injury to both drivers.                   |  |  |  |
| 28. Name and title of person signing report<br>William B. Kirkland, Jr.    Owner   |  | 29. Signature<br><i>William B. Kirkland Jr.</i>  |  |
| 30. Telephone Number<br>Area Code    301-345-2890  |  | 31. Date report submitted (27-32)<br>...1.../23.../73...   |  |

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**McKesson**  
Operations

| Section                          | Reference  | Page           | End |
|----------------------------------|------------|----------------|-----|
| TRANSPORTATION                   | 30.63      | 1              | X   |
| Subject                          | Issue Date | Effective Date |     |
| EMPTY TANK CAR INSPECTION REPORT | 9/15/85    | 9/15/85        |     |

GENERAL      Federal Railroad Administration now requires users of tank cars to perform empty tank care inspections prior to the cars' release. Along with the inspection form (Exhibit 1), we must also comply with the following:

WHILE  
UNLOADING

1. Check wheels
2. Rail sign - STOP - Tank Car Connected
3. Disconnect all lines and hoses overnight.

EMPTY CAR

1. Reverse placards (if applicable)
2. Tighten all valves, domes, caps, plugs, etc.
3. Complete empty tank car inspection report.
4. Remove sign from track.

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# EMPTY TANK CAR INSPECTION REPORT

Car No. \_\_\_\_\_ Spot \_\_\_\_\_ Date   /  /  

Last Material \_\_\_\_\_ Size \_\_\_\_\_ Time \_\_\_\_\_  
J/C, T/C, ETC.

☐ EMPTY

**☐ UNLOADING VALVES CLOSED**

☐ HATCH GASKET CONDITION

☐ HATCH CLOSED & BOLTED

☐ PLACARDS TURNED

☐ UNLOADING CONNECTION CAPPED

Inspected By \_\_\_\_\_

~~WHITE - OFFICE~~ ~~CANARY - PLANT~~

CHEM OF 30.63 Exhibit 1  
9/15/85 9/15/85  
Page 1 of 1

**MIKIL 40548**

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**McKesson**  
Operations

| Section                    | Reference  | Page           | End |
|----------------------------|------------|----------------|-----|
| TRANSPORTATION             | 30.65      | 1              | X   |
| Subject                    | Issue Date | Effective Date |     |
| TRAINER MANUAL FOR DRIVERS | 9/15/85    | 9/15/85        |     |

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b. Specific Driver Responsibilities
- Chapter 7 - Road Conditions and Weather
- Chapter 8 - Rules and Regulations

INTRO-  
DUCTION

This manual is published by the Private Truck Council of America, Inc. and is one of only a few training text books available today.

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CHEM OP 30.65 Exhibit 1  
9/15/85 9/15/85

# **DRIVER TRAINER MANUAL**

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# **CHAPTER I**

## **THE DRIVER TRAINER**

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## THE DRIVER TRAINER

In many cases the only contact between a company and its customers is the truck operator. Likewise, the impression the public has of a company is greatly influenced by the condition of its motor vehicles and how the drivers handle them. It is essential the company have truck operators who are capable of assuming the responsibilities of the position as well as promoting good customer relations and the good will of the public.

This is not accomplished without effort. After proper selection, proper training of the truck operators in all aspects of their duties and responsibilities is essential. To achieve uniformity in training, and to lessen the possibility of untrained drivers being placed into the operational flow of a company's distribution system, a training program should be established. Driver training takes time, money, equipment, plant facilities and trained personnel. But it will more than repay the company through improved customer and public relations, conservation of company equipment and, most importantly, through the reduction of losses from accidents.

The driver training plays a vital role in this training program. Once a commitment to driver training has been made by the company, the driver trainer is the one who will implement it and be the guiding force involved in it.

### *Full-Time or Part-Time Driver Trainer*

Among the considerations that must be given to the use of driver trainers is whether they should be full-time or part-time positions. There is no definitive answer. A company must make this decision based on a number of factors, among which are personnel needs, type and complexity of training needed, geographical spread of the organization and other such factors.

An "experienced" or "senior" driver may be assigned the driver training duties on a part-time basis. A new employee might be teamed with him for a few days or a few weeks to determine his driving capabilities while also training him in the proper use of equipment, paperwork, and so forth. He could also be identified as a driver trainer only when the training service is needed, for however long it takes, and then work as a regular driver all other times.

The type of operation will determine the number of trainees the full-time driver trainer will be able to handle. This should allow for the development of training materials, training of new drivers, retraining of in-service drivers and other job assignments. A full-time driver trainer may have sufficient work at one location or may travel to several locations.

When needed, a company driver training school should be considered. If a company school is established, all new drivers should be scheduled to attend before they are allowed to drive company equipment. Once this formal training has been accomplished and the employee returns to his operational location, the new driver should be teamed with an experienced driver to continue his training, gaining more experience while being productively employed.

There are times when drivers with tenure have difficulty maintaining their driving professionalism. The company

driver training school presents the ideal way to take these drivers out of their everyday environment for retraining under controlled conditions. If handled correctly, this should give the driver a different perspective on his driving and how the company wants him to operate their vehicles.

### *Qualifications of a Driver Trainer*

Regardless of whether the company wants only a part-time driver trainer or a more elaborate training staff, the person(s) selected to do the training must have certain qualifications. Among these qualifications are:

- a mature and personable individual who is respected and relates well to others when working with them or teaching them.
- a minimum of 3-5 years driving experience with a satisfactory safe driving record.
- able to explain and demonstrate driving skills and vehicle handling.
- knowledgeable in company policies, procedures, practices, rules, paperwork, etc., as well as state and federal laws and regulations relative to vehicle operations and able to instruct and interpret in these matters.
- able to understand and interpret driver tests and performance records to determine when training and retraining are necessary.
- personally neat and able to encourage others to maintain themselves and their vehicles in the same manner.
- able to plan, organize and record his work in an orderly manner and to do so without the need for constant supervision.

Along with all the above, probably the most important attribute would be the DESIRE to teach. The desire to teach will motivate the driver trainer to prepare properly and teach with enthusiasm. The preparation and enthusiasm the instructor has will be quickly recognized by the student drivers and make it that much easier to accomplish the training goals.

The above qualifications are basic for the position of driver trainer. Particularly in regard to knowledge of company policies, procedures and products, it might be wisest to look within the organization for a prospective driver trainer. However, the search should not exclude likely candidates from outside the company.

Instructor training is offered at a number of locations around the country by the National Committee. Information may be obtained by writing:

National Committee for Motor Fleet Supervisor Training  
Institute of Public Safety  
The Pennsylvania State University  
University Park, PA 16802

Other sources would be local community colleges, high school adult education courses or local, state and national industry associations offering instructor training, and vehicle leasing companies.

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#### ***Duties of a Driver Trainer***

Once a decision has been made to appoint a driver trainer, whether part-time or full-time, his responsibilities and authority must be established. His first and foremost responsibility should be the training of all driver personnel of the company. Typical formal training might include:

- introduction and orientation to the company which should include at least the who's who of the company, what the company does or manufactures, the driver's obligations and responsibilities, his benefits and the company's operational procedures, rules and regulations.
- knowledge of local, state and federal regulations affecting the company and vehicle operation.
- pre-trip vehicle inspections and daily vehicle condition reports.
- on combination units — unhooking and hooking up.
- proper driving skills, including the mechanics of operating the equipment as well as techniques for properly driving on the highway for safety and energy conservation.
- loading and unloading procedures, securing of loads and other safe work habits.
- knowledge of traffic rules.
- proper handling and completion of necessary paperwork and records.

- emergency procedures while on the road and for type of commodity.
- accident procedures including what to do, when to do it and appropriate reports. This could include a course in emergency medical training and cardio-pulmonary-resuscitation (CPR).
- any other training in special conditions or procedures that the company might desire.

The driver trainer should teach and develop a positive attitude toward safety. He should also develop appropriate teaching plans and utilize necessary visual aids and equipment.

As part of his job, the driver trainer should have the responsibility of road testing prospective and new drivers, and when appropriate, administering the written test as required by the Department of Transportation. The driver trainer's judgment of the prospective driver's ability to handle the vehicle should be a major factor in determining whether he will be acceptable as a driver. Also, it is the first indication to the driver trainer of the type of driver coming on board and what training will be needed.

It should be noted that all suggested activities relate to the driver trainer's primary responsibility. All activities that enhance his ability to train drivers will allow the company to develop skilled operators who can perform their assigned tasks safely and efficiently.

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## **CHAPTER 2**

# **EFFECTIVE TEACHING METHODS**

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## EFFECTIVE TEACHING METHODS

Undoubtedly, teachers have left their mark on us in how we think and react to situations. You, as driver trainers, will certainly have an influence on those that you train. The degree of influence will depend on your preparation, enthusiasm and ability to motivate your trainees. As a driver trainer you are sold on safety and defensive driving practices, so you should instill the same desire in your trainees.

This will be your first challenge. Through contact you learn what "turns him on." Use this in selling the importance of driving safely — maybe he is a hunter, golfer or bowler — use this "hobby." Most of our trainees want to do the best job of driving possible most of the time. It's up to you to find the key that creates a desire for him to learn and practice safe driving procedures.

### Effective Instruction

Your trainees should return home feeling that the training they have just completed was well presented in clear, understandable terms and that your methods were the best possible for the subject.

Following is an outline on "How to Instruct" and then, some simple, practical suggestions for making your instruction more effective. This latter listing should be considered as a suggested check list to clarify points and to help you. The suggestions are divided into two groups: A. *Before* meeting with your trainee, and B. *While* meeting with your trainee.

### How to Instruct

#### Step 1 — Prepare the Driver Trainee

- A. Put the trainee at ease.
- B. State the job and find out what he already knows about driving.
- C. Motivate him.

#### Step 2 — Present the Operation

- A. Tell, show and illustrate one important step at a time.
- B. Stress each key point.
- C. Instruct clearly, completely and patiently, but no more than he can master.

#### Step 3 — Try Out Performance

- A. Have him do the job — correct any errors.
- B. Have him explain each key point to you, as he does the entire job again.
- C. Make sure he understands.
- D. Continue until you know he knows.

#### Step 4 — Testing

- A. Put him on his own.
- B. Give critique of performance.
- C. Answer questions.

REMEMBER, IF THE TRAINEE HASN'T LEARNED, THE TRAINER HASN'T TAUGHT!

### Essentials of Effective Teaching

#### A. Before Meeting with Your Trainee:

1. Be prepared. You are a professional driver and instructor who must both understand and practice expert driving techniques. As a driver trainer, you must strive for perfection, both behind the wheel and as a teacher. You must be *enthusiastic* and *believe* in what you are going to teach.
2. Have your objectives clear in your mind. This varies, of course, depending on the trainee's experience, but you should have a planned course of action to take once you have determined his capabilities. For example, should your trainee be an experienced driver, your plans would include *perfecting* his skills as quickly as possible, rather than waiting, as might be expected with the driver with less experience.
3. As most human minds can grasp only a few things at a time, it's important *not* to attempt to teach too much at once. Let's take shifting as an example. If his experience is limited, a beginner might become nervous and confused using the tachometer. When he's unable to shift the transmission, the instructor might better *tell* him when to shift, waiting until that has smoothed up to teach anticipating and shifting with a tach.
4. Plan your work so as to get the trainee participating as much as possible. For example, during the first vehicle inspection, he would feel much more comfortable and learn more by listening and watching during the entire inspection.

#### B. While Meeting with Your Trainee

1. Always speak with *enthusiasm*! Your interest and desire will be contagious. Be this way from the instant you meet your trainee and until he leaves. An instructor interested in helping people should *not* find himself in a position of *forcing* himself to be enthusiastic. Under these circumstances, you could lose your effectiveness and should not carry on with future training.
2. Be *sympathetic*. Remain *calm* and *patient*, regardless of what is happening. There are, naturally, occasions where "being calm" is extremely difficult. "Losing your cool" could only bring more problems.
3. *Never humiliate a trainee!* Never indicate by your actions that you consider that he lacks intelligence. As pointed out above, be patient and strive even harder to get the point across.
4. *Never talk down to your trainee*; that is, avoid insulting his intelligence by assuming an air of superiority. You'll lose his respect quickly! (Not one of us enjoys listening to someone who is continually reminding everyone that he possesses far more talent than we do.)
5. Create an atmosphere of *informality*. Your job of teaching will be easier and more effective.
6. Respect each trainee's viewpoint but make your own

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perfectly clear. Consider mirror use as an example. Some drivers are *not* convinced that mirrors need checking while turning, unless they are aware of a potential hazard. You could agree by stating that if all drivers did this, you're sure there would be a lot fewer accidents. However, to form any habit, it must be continuously practiced; that there could be a situation requiring a close mirror check that a driver was *not* aware of. Another thought is this: Mirrors are checked for *two* reasons: to keep track of what is going on, and to *keep your eyes moving*. Avoid arguments! The chances are good that an example of what you are trying to sell will come about and you will be able, courteously, to point it out without saying "I told you so."

7. If a trainee is unable to perform some task, such as split-shifting, take the wheel and demonstrate it. This

should accomplish a couple of things. First and foremost, it is easier to *watch* how this is done rather than to *hear* how. Secondly, you earn more respect when you're able to perform what you expect him to learn. Most of us are quick to sense the "armchair" instructor.

8. Be *complimentary*. When the trainee has done something correctly, take time to tell him. We all enjoy a "pat on the back" and it will encourage him to continue doing his best.

It must be remembered that a *driver trainer's* primary function is to develop and teach drivers to be safe and efficient. Your sincere interest in helping will be long remembered and should *create* the desire to follow your recommendations and become a top-notch professional.

### "ANALYZING THE LEARNER"

| Type of Learner         | Characteristics of Learner   | Training Approach  | Pitfalls to Avoid  | The Payoff  |
|-------------------------|--|--|--|---|
| <b>The Slow Learner</b> | May be nervous, inexperienced, or have language problem. May also feign experience.                                | Emphasize accuracy rather than speed. Go easy and provide ample time for questions, trial and error. Offer encouragement. Repeat instructions if necessary. Show enthusiasm.                     | Avoid showing impatience or irritation to avoid discouragement.  | Because it was not easy for him, the slow learner, well-trained, is likely to retain the learning, making a steady, reliable driver.  |
| <b>The Older Driver</b> | Has the double problem of learning something new while <i>unlearning</i> old habits.                               | Relate the new to the old as much as possible. Point out differences, make comparisons. Adjust speed to his pace.  | Beware of patronizing. Be on lookout for signs of physical strain.   | The older driver who has mastered something new is grateful for the opportunity. Can be both conscientious and reliable.  |
| <b>Experienced Man</b>  | Assumes that because type of job is the same, there's nothing you can teach him.                                   | Insist on use of your company methods. Step by step, compare your methods and his, noting similarities and differences. On the differences, mark point of departure and give reasons for change. | Don't belittle his past experience or suggest in any way the methods he has used were wrong for the job he was doing.  | Eventually, the driver hired from another firm for the same line of work is in a position to come up with suggestions on how to improve methods.                            |
| <b>Eager Beaver</b>     | Anxiety to please causes him to say he knows how, or to ask questions just to get your attention.                  | Listen to his questions patiently but try to get him to answer them himself. This uncovers the unnecessary questions and helps you to check his real knowledge.                                  | Be cautious when he says "no" to your "any questions" or if he says "when do I try it?" Don't let him make you eager to end the training.                    | His eagerness will make him receptive to new assignments. Make sure he understands everything.  |
| <b>Careless Learner</b> | Really doesn't care, or just never got into the habit of paying attention to details, or never had a good trainer. | Talk to him privately and try to find out what his reasons are. Focus on importance of attention to detail. Motivate him to aim for accuracy. Forget speed for now.                              | Don't hesitate to call his attention to any detail overlooked or sloppily handled. Tell why this won't pass. Give ample time for practice under supervision. | The careless driver who is not checked early in the game will add heavily to department costs through errors, waste or accidents. Nip bad habits and avoid later headaches. |

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### *The Driver Trainer's Responsibilities*

We repeat, a driver trainer's primary job is *teaching*. This would include driving skills, loading and unloading procedures, plus all other functions that are involved in your operations. If unusual weather or road conditions exist, it might be better for you to keep the wheel for the safety of all involved. It should also be pointed out that you should not expect too much from a driver with limited experience. We would all agree to the necessity of being *told* how to do a job properly, but we catch on more quickly after being *shown* and getting the chance to try it ourselves. In some cases, procedures may need several demonstrations.

If you feel that the new driver needs additional training

after the normal training period, we expect you to contact the trainee's supervisor.

A written report (road test check sheet) should be completed and filed on each trainee for the time spent training. Some trainers find it beneficial to let the trainee see a blank report *before* driving. Most certainly, you should go over the driver's progress with him at the end of each day.

### *Scheduling Trainees with the Driver Trainer*

Check local regulations to determine the amount of training before licensing. Some states require all commercial vehicle operators to be qualified in accordance with Federal Motor Carriers Safety Regulations. *You should not release a trainee until he is a qualified operator.*

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## **CHAPTER 3**

# **GETTING TO KNOW THE VEHICLE AND COMPONENTS**

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## GETTING TO KNOW THE VEHICLE AND COMPONENTS

### 1. Introduction

The purpose of this session is to familiarize driver with the characteristics of the types of vehicles he may drive.

All drivers, regardless of experience, should be exposed to an introduction to the vehicles, both power and trailer. The schedule can be expanded depending on the experience of the driver. The following is a minimum.

**Classroom** — This session can include lectures, films, company policy on equipment and maintenance, emergency procedures and general discussion. The time required can vary from 1 hour to 1 day.

**Road Training** — This can be divided into two sessions as follows:

- (1) Discussion using vehicle but practice off-road driving.
- (2) Road driving, 10 or more miles, to demonstrate the characteristics of the vehicle.

### 2. Classification of Vehicles

For drivers changing from one type of vehicle to another, it is very important that the vehicle characteristics be thoroughly covered. For example, a tractor driver changing from a van trailer to a tank trailer must learn the difference in design and the effect on handling. This remains true even though different loads are carried in the same type van trailer all the time.

An outline should be prepared of the key points to be covered so it can be discussed and also provided to the driver.

### 3. Components of Vehicle

The design, construction and equipment must be explained, with emphasis on the relationship to handling characteristics. Although a knowledge of the vehicle is valuable, even more important is an explanation of why the company uses certain vehicles. The following are important areas to explain for both power vehicles and trailers.

|                |                   |
|----------------|-------------------|
| Engine         | Tires             |
| Power Train    | Suspension System |
| Steering       | Mirrors           |
| Fifth Wheel    | Auxiliary Systems |
| Cab Equipment  | Safety Features   |
| Braking System |                   |

### 4. Vehicle Failure

Instruction should be given concerning failure of any part of the vehicle on the road and what action the driver is to take.

### 5. Warming-up Engine (see Chapter 5)

Instruction should be given on required procedures to be

taken as the engine is warming up. A check list of items should be used as a teaching aid and given to the driver. Also, instruction should be given on action to be taken if all components are not working properly.

### 6. Training Aids

Various types of training aids can be used for more effective training. The more the driver can "see" and "do," the more he will remember. A simple drawing on a blackboard or a sketch of the equipment will help the driver understand the information. Films, pictures and books are very effective.

An outline can be useful to both the trainer and the driver trainee. If the trainer wishes, the outline can be filled in completely so all points to be presented are in the outline. The following outline is an example on a braking system.

1. Compressor
2. Governor  
maximum and minimum air pressure
3. Brake valve  
foot operated — controls brake air pressure
4. Brake Chambers
5. Slack Adjusters
6. Tubing and fittings
7. Safety Valve — pop pressure \_\_\_\_\_
8. Reservoirs — regular and emergency
9. Back Pressure Check Valve
10. Reservoir Drain Cocks
11. Air Gauge
12. Low Pressure Indicator — pressure \_\_\_\_\_
13. Stop Light Switch
14. Quick Release Valve
15. Front Wheel Limiting Valve
16. Hose Couplings
17. Spring Brake Assemblies
18. Tractor Protection Valve Control
19. Tractor Protection Valve
20. Independent Trailer Control Valve
21. Parking Brake Control
22. Spring Brake Emergency Release
23. Relay Valve
24. Relay — Emergency Valve

### Summary

To check the effectiveness of the instruction, the trainer may request the driver to repeat the information back to the trainer. Another technique is to give a written test, perhaps using multiple choice questions, such as this one:

In parking a tractor, semi-trailer, you should always use:

- a. independent trailer control valve
- b. trolley valve
- c. spring brakes
- d. front wheel limiting valve

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## **CHAPTER 4**

### **PRE-TRIP INSPECTION**

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## PRE-TRIP INSPECTION

### Introduction

There are many and varied methods of making pre-trip inspections. Several are outlined in this manual. Following is a reasonably detailed minimum check type of inspection. For assistance, at the end of the chapter are several outlines of pre-trip driver inspection and vehicle condition reports.

Remember that the proper training of a new driver, plus the orientation of a new-hire, experienced driver in your desired method of pre-trip inspection is the first step in on-the-road safety and major reduction of unnecessary breakdowns on the road.

### Methods of Making Pre-Trip Inspection

Carefully explain the need for a good pre-trip inspection. Answer all questions. Erase all doubts as this is the first step in insuring that the new driver understands the need for him properly to care for and maintain his company equipment.

### Pre-Trip Inspection and the New Driver

Every new driver should be trained and tested on three important facets in which he, as a professional, should be proficient. They are the pre-trip inspection, recognition and reporting of defects in the equipment, and actual operation of the equipment. An experienced, but newly hired, driver should also be expected to demonstrate sufficient proficiency in these areas to meet your standards. If the experienced or well-trained candidate cannot meet expectations in these areas, he should not be considered further.

One method to check knowledge and interest in pre-trip inspections is to prepare a vehicle (truck, tractor-trailer, or other vehicle with the same features as the vehicle to be operated) with some safety defects which the candidate driver should detect and report.

Prior to the time applicants are to report, set up your testing equipment so as little time as possible is lost in screening. Below is a procedure which has proved effective.

- A. The vehicle — A truck or tractor suitable for the required testing should be spotted near dock and office area. This vehicle should have been prepared to test the candidate for knowledge of safety and mechanical requirements. Some prepared problems would be:
  1. Disconnect one head lamp.
  2. Disconnect right hand windshield wiper (hose, if vacuum, or air, electric wire, if electric).
  3. Remove bulb from one of rear directional lights and one of the taillights.
  4. Disconnect horn.
  5. Improper tire pressure.
  6. Loose lug nuts.
  7. Missing safety equipment.
  8. Low coolant.
  9. Dirty, improperly adjusted mirrors.
  10. Improperly secured cargo.
- B. None of the first four defects will seriously affect operation of the truck. They are safety features built into

the equipment to alert the public of the driver's intentions and to give him and the vehicle means to operate safely. The last six are critical safety items and should be corrected before actual operation.

### Pre-Trip Inspection Explanation

Following is an example of a pre-driving inspection in great detail. It can be followed, modified, adapted as needed to suit your purpose.

The driver trainer should demonstrate how to make a good, thorough pre-trip inspection. As he goes through the established procedure, he should point out the reasons behind the inspection of essential equipment and what to watch for during the inspection. Each trainee should then make an inspection to demonstrate his proficiency and familiarity with the established procedure, and the procedure should be used as his own.

The sequence of the pre-trip inspection may differ according to the type vehicle and vehicle configuration. The essential elements are listed in this procedure but should be modified to meet your needs.

### 1. BEFORE ENTERING CAB

- A. *Check for leaks and fuel level.* Look under and around the vehicle for any evidence of oil, fuel, water or radiator coolant. See if there is any apparent damage to the undercarriage of the vehicle or any body damage.
- B. *Disconnect engine block or radiator heater plug* if your vehicle is equipped with this device. Then secure the heater cord in its proper place.
- C. *Check the level of the oil.* Watch for unusually thin, dirty or foaming oil on the dip stick. If oil is low, fill to proper point. If there is too much oil, report it to your supervisor immediately.
- D. *Check the radiator coolant* to be sure it is at the proper level. Remove the radiator cap carefully, relieving the pressure slowly so the coolant won't splash into your face. In the summer, add coolant if necessary. In the winter, check the solution with a hydrometer to be sure that it is the proper mixture specified for that time of year in your area. If necessary, add coolant or the mixture of anti-freeze required. If a large amount has to be added, this should be reported to your supervisor. It could mean that there have been leaks or that the engine has been running too hot.
- E. *Check engine compartment* for any evidence of worn or loose belts, cracked or worn wiring, faulty hoses or leaks in any of the lines. Correct and report any serious defect you discover.
- F. *Turn on battery disconnect switch* if vehicle is so equipped.

### 2. ENTER CAB

- A. *Insure the parking brake is set.*

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- B. *Check that gear shift lever is in neutral position.*
- C. *Start the engine.* (Please refer to Manufacturer's instructions for your vehicle.) When starting, you should use only the amount of choke or prime necessary. In warm weather, you may not have to choke at all. Depress the clutch pedal to about 1 inch from the floor in order *not* to burn up the clutch brake and to relieve the starting engine of the drag of the transmission. Never run the starter for more than 10 or 15 seconds at a time. If the engine doesn't start, wait several seconds and try again. Once the engine is started, *check the oil pressure gauge*. If proper pressure is not indicated, stop the engine immediately and discover the trouble before attempting to start again. *Don't race the engine* — this causes unnecessary wear. Set the throttle at slightly above idle speed and allow engine coolant to warm.

### 3. IN CAB — DURING WARMUP

- check fuel gauge and other instruments
- is your *ammeter* registering charge?
- is your *air pressure* building up?
- switch on all *lights and accessories* and your *left turn signal indicator*
- do your *windshield wipers* work?
- is your *heater and defroster* operating?
- does your *dimmer switch* operate and give you the proper signal?
- *adjust your seat* for maximum comfort. Be sure your feet rest squarely on accelerator, brake and clutch. Select the adjustment that suits you best.
- after adjusting your seat, *adjust your mirrors* for maximum vision. Proper mirror settings are shown in Chapter 5. Are the mirrors clear?
- check *all emergency equipment* for location and serviceability (includes fire extinguishers, fuses, emergency reflectors and chains in season).

### 4. OUT OF CAB — DURING ENGINE WARMUP

- A. *Check headlamps and front left turn indicator.*
- B. *Check cab marker lights.*
- C. *Check air hoses and electrical connections* between tractor and semi-trailer. Are hoses sound and properly coupled? Are there leaks?
- D. *Check tires on left side.* Watch for excessive tread wear, foreign objects in tread, cuts or sidewall damage, proper inflation. Are wheel lugs tight? Rust around lug could indicate a loose one.
- E. *Check rear marker lights, reflectors, rear left turn indicator, anti-underride protection and splash guards.*
- F. *Check left side marker lights and reflectors.*
- G. *Check outside fire extinguisher(s) if required.*
- H. *Check cargo securing devices and spare tire.*

### 5. IN CAB — DURING ENGINE WARMUP

When you have completed your check of the left side, return to the cab and flip the *headlamp dimmer switch* and turn your *turn indicator* from left to right. While in the cab, make a quick *check of your instruments* and set the independent trailer brake control to *activate stop lights*. Now you are ready to step out and check the right side.

### 6. OUT OF CAB — DURING ENGINE WARMUP

- A. *Check your headlamps again* — this gives you a complete check on both high and low beams.
- B. *Check right front turn indicator.*
- C. *Check "Fifth Wheel" lubrication, cracks, mounting, locks, king pin engagement.* If hooked to trailer, be sure safety catch is engaged.
- D. *Check air hoses and electrical connections again.*
- E. *Check tires and wheel lugs* on right side thoroughly, just as you did on the left side.
- F. *Check right rear turn indicator, reflectors and stop lights.*
- G. *Check side marker lights and reflectors.*
- H. *Check all unloading accessories* — hoses, couplings, fittings, faucets, wrenches and tools if you have a tanker; for flatbed, check cargo securing devices and spare tire. Is everything in its proper place and in good condition?
- I. *If fire extinguisher is required on right side, is it sealed and charged?*
- J. *Check for water in air tanks and proper functioning of low air pressure warning indicator.*
  - 1. If required, set wheel chocks so vehicle is secure.
  - 2. Open pet cock on No. 1 (main air tank/wet tank) until all water is drained. Then close pet cock. (If there appears to be an excessive amount of water or a slug of water, report it to maintenance personnel so automatic water drain can be checked.) This draining should not activate low air pressure warning indicator. If it does, the check valve between No. 1 and No. 2 tanks is not holding and should be reported to maintenance personnel.
  - 3. Open pet cock No. 2 tank (dry tank) and allow air pressure to drop until the low pressure warning indicator is activated. Then close the pet cock.
  - 4. Allow air pressure to build back up to normal pressure.
  - 5. Remove wheel chocks and store properly.
- K. *Check sanders* if vehicle is so equipped — and chains when required for the winter.
- L. On double bottom rigs, *check pintle hook* to see that jaws are closed and locked; insure safety cables or chains are properly attached. Visually check dolly and mounting bolts.

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## 7. IN CAB — DURING ENGINE WARMUP

Return to cab to complete the pre-driving inspection.

- A. *Fasten your seat belt.*
- B. *Recheck all instruments.* Has engine warmed up? Is oil pressure still O.K.? Does low air pressure indicator cut off when air pressure has been restored to normal?
- C. *Set Independent Trailer Brake Control.* Then, by rocking the tractor in first low gear and in reverse low, you can feel if there is excessive slack in the king pin lock and fifth wheel. If there seems to be excessive movement, report it immediately to your supervisor.
- D. *Check tractor protection valve.* Flick the lever from "Normal" to "Emergency". This should activate trailer brakes. Check by placing tractor in low first gear. If trailer brakes have not locked, report it immediately to your supervisor. If trailer brakes locked, flip lever back to "Normal" and again check to be sure brakes are released. This procedure will show without uncoupling the trailer emergency air hose that tractor protection valve is working properly. This valve conserves the tractor air supply to stop the vehicle safely in case of an emergency. It works automatically when pressure drops to 40 pounds, or it can be operated manually.

## 8. IN CAB — TESTING BRAKES

- A. *Test the service brakes.* With air pressure set at maximum, stop the engine and apply the brakes fully. If the air pressure drops more than three pounds in one minute on a single vehicle or more than four pounds in one minute on a combination vehicle, something is wrong in the air system. Report it immediately to your supervisor and do not drive the vehicle until the air system has been corrected.
- B. *Test the parking brake.* Permit vehicle to roll very slowly and apply the parking brake. If the brake does not hold, you have no parking brake. If it does not hold, report it immediately to your supervisor and do not drive until this has been corrected.
- C. *Test independently your service and trailer at slow speed (5-10 mph) before leaving yard.*
- D. Complete pre-trip requirement on vehicle condition report.

## 9. SPECIAL EQUIPMENT

Since the equipment has wide variance, each company should use own check list for special equipment.

If you have found any defects in your vehicle, you will note them on your daily vehicle condition report and get a decision from your supervisor on whether the vehicle should be operated.

## SAMPLE PRE-TRIP INSPECTION OUTLINE

1. Approaching the vehicle, look for leaks and apparent damage underneath and on vehicle.
2. Under hood — check oil.
3. Under hood — check radiator coolant.
4. Under hood — check belt drives.
5. Under hood — check wires.
6. Under hood — check fuel line for leaks.
7. If so equipped, turn on battery disconnect switch and disconnect engine block/radiator heater plug; secure heater cord.
8. In cab, start engine — check for normal accessory operations and instrument readings.
9. Adjust mirrors — clean if needed.
10. Turn on all lights and check through rearview mirrors; check dimmer switch and dash indicator.
11. Set independent trailer brake control to activate stop lights.
12. Outside — check l/f wheel, nuts, tire.
13. In front of unit, check headlamps, cab and body lights.
14. In front of unit, look under at front axle and steering.
15. Check r/f wheel and tire.
16. Check security of spare tire, fuel tank.
17. Check r/f drive wheels, tires, splash guards.
18. Check rear springs, air lines, etc.
19. Check r/f, centr, r/r lights and reflectors.
20. Check trailer landing gear, fully raised.
21. Check trailer landing gear handle secured.
22. Check trailer spare tire and cargo securing devices.
23. Check r/r wheels, tires, splash guards.
24. Check r/r springs, shackles, air lines, frame.
25. Check rear lights, doors secured, underride protection.
26. Check l/r springs, shackles, air lines, frame.
27. Check l/r wheels, tires, splash guards.
28. Check cargo securing devices.
29. Check l/r, center, l/f lights and reflectors.
30. Check l/r drive wheels, tires, splash guards.
31. Check/test fifth wheel mountings, lock/kingpin engagement.
32. Check air hoses and electrical connections to trailer.
33. Drain air tank, check fuel tank, battery box.
34. Clean glass and check w/s wipers.
35. Check safety equipment — emergency reflective triangles, chains, fuses, fire extinguisher(s), fuses.
36. Check brakes (full air application). Air pressure below 40 psi, check on pressure buildup. If air pressure above 60 psi, deplete air until warning device works. Vacuum below 8 in. hg., check on build-up; above 8 in., deplete vacuum until device works.
37. Check tractor protection valve.
38. If trailer coupled, ease tractor forward with trailer brakes set. Crank up trailer dolly as far as possible. Secure crank to hook.
39. Complete driver inspection report.
40. Check brakes at slow speed on level ground in yard.

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Company \_\_\_\_\_

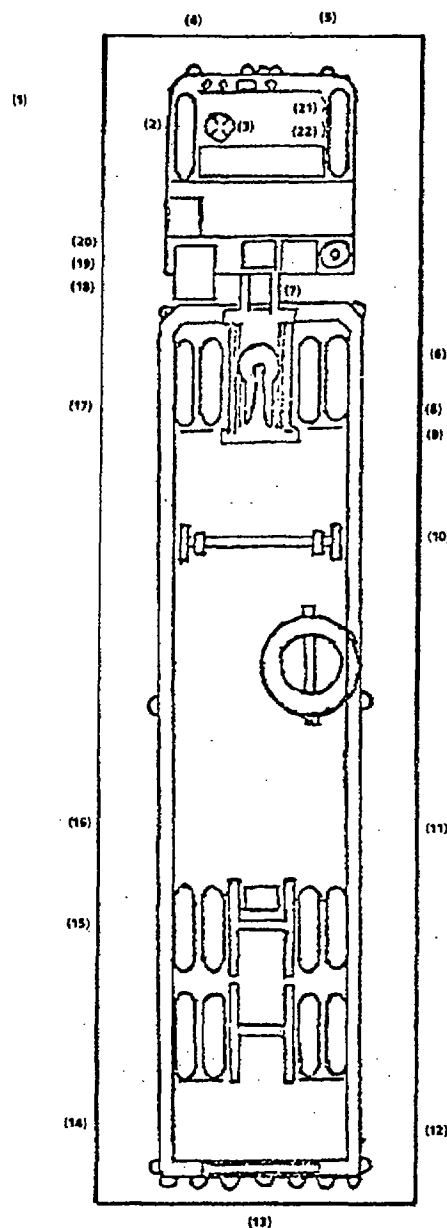
Date \_\_\_\_\_

Location \_\_\_\_\_

Truck or Tractor Unit # \_\_\_\_\_

Trailer Unit # \_\_\_\_\_

1. ☐ General condition exterior side and front tire tread inflation — leaks, weak springs, trash under unit.
2. ☐ Oil, water, belts, fuel tanks, wiring, seals, safety latches. START ENGINE.
3. ☐ Oil, amp, air gauges, pilot lights, low air warning, parking brakes, heater defroster, mirror, heater alignment control valves, air build up air locks, air condition, steering free play — less than 4", controls, clutch valve, etc. Turn on all lights including emergency flasher, safety belts and sleeper restraints.
4. ☐ Tires, wheels, lugs, hubs, cap lights, front of unit steering suspension, brake hoses and wiper blades, bumper road lights (4/32" tread required on front.)
5. ☐ Right tires, wheels, lugs, hubs, steering, suspension, brake hoses, wiper blades.
6. ☐ Tires, wheels, lugs, hubs, steering suspension adjustment.
7. ☐ Air and electrical connections and supports. 5th wheel latch. Fuel tank.
8. ☐ 5th wheel safety lock check.
9. ☐ Side marker and reflector. Cargo/load.
10. ☐ Landing gear — low range crank in support-intermediate lamp and/or reflectors, spare tires.
11. ☐ Tire, wheels, lugs, hubs, brake hoses and slack adjustment, suspension. Cargo/load.
12. ☐ Rear side lamp and reflector.
13. ☐ Rear marker and reflector, door and seal, bumper. Internal cargo.
14. ☐ Rear side lamp and reflector.
15. ☐ Tires, wheels, lugs, hubs, brake hoses, and slack adjustment, suspension (2/32" tread rear.)
16. ☐ Sliding tandem position and lock. Air tank drain. Cargo/load.
17. ☐ Tires, wheels, lugs, hubs, brake hoses and slack adjustment, suspension.
18. ☐ Marker lamps and reflectors.
19. ☐ Fuel tanks and battery.
20. ☐ Drain air tank.
21. ☐ Turn off lights unless needed, check safety equipment, wipe off all glass, have all defects corrected.
22. ☐ Set trailer brake and test 5th wheel couplin by slight pull forward.
23. ☐ Complete pre-trip report.



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# McKesson

## TRUCK SERVICE REPORT

Date \_\_\_\_\_ Time \_\_\_\_\_ A.M. \_\_\_\_\_ P.M.

CHECK ONLY THOSE ITEMS REQUIRING SERVICE AND EXPLAIN BELOW:

| Mechanic's<br>Driver's                     |   | TRUCK OR<br>TRACTOR NO. _____             | Mechanic's<br>Driver's                       |                                    | TRAILER<br>NO. _____ |
|--|---|---|--|------------------------------------|----------------------|
| <input type="checkbox"/> Air Compressor    | <input type="checkbox"/> Front Axle       | <input type="checkbox"/> Springs          | <input type="checkbox"/> Brake Connections   | <input type="checkbox"/> Roof      |                      |
| <input type="checkbox"/> Air Hoses         | <input type="checkbox"/> Fuel Tanks       | <input type="checkbox"/> Steering         | <input type="checkbox"/> Brakes              | <input type="checkbox"/> Springs   |                      |
| <input type="checkbox"/> Battery           | <input type="checkbox"/> Heater           | <input type="checkbox"/> Tachograph       | <input type="checkbox"/> Coupling Chains     | <input type="checkbox"/> Tarpaulin |                      |
| <input type="checkbox"/> Body              | <input type="checkbox"/> Horn             | <input type="checkbox"/> Tires            | <input type="checkbox"/> Coupling (King) Pin | <input type="checkbox"/> Tires     |                      |
| <input type="checkbox"/> Brake Accessories | <input type="checkbox"/> Lights           | <input type="checkbox"/> Transmission     | <input type="checkbox"/> Doors               | <input type="checkbox"/> Wheels    |                      |
| <input type="checkbox"/> Brakes            | <input type="checkbox"/> Losses Water     | <input type="checkbox"/> Wheels           | <input type="checkbox"/> Hitch               | <input type="checkbox"/> OTHER     |                      |
| <input type="checkbox"/> Clutch            | <input type="checkbox"/> Mirrors          | <input type="checkbox"/> Windows          | <input type="checkbox"/> Landing Gear        | (Explain                           |                      |
| <input type="checkbox"/> Defroster         | <input type="checkbox"/> Oil Pressure     | <input type="checkbox"/> Windshield Wiper | <input type="checkbox"/> Lights              | Below)                             |                      |
| <input type="checkbox"/> Door Handles      | <input type="checkbox"/> Power Lift Gate  | <input type="checkbox"/> OTHER (Explain   | <input type="checkbox"/> Power Lift Gate     |                                    |                      |
| <input type="checkbox"/> Drive Line        | <input type="checkbox"/> Radiator         | Below)                                    |  |                                    |                      |
| <input type="checkbox"/> Engine            | <input type="checkbox"/> Rear End         |   |  |                                    |                      |
| <input type="checkbox"/> Fifth Wheel       | <input type="checkbox"/> Safety Equipment |   |  |                                    |                      |

DRIVER'S EXPLANATION: \_\_\_\_\_

DRIVER \_\_\_\_\_

SUPERVISOR'S REMARKS: \_\_\_\_\_

APPROVED \_\_\_\_\_

GARAGE'S REMARKS: \_\_\_\_\_

☐ Above defects corrected ☐ Above defects need not be corrected for safe operation of vehicle

SIGNED \_\_\_\_\_

Garage Supervisor

Driver reviewing repairs \_\_\_\_\_ (Signature)

REPLY COPY — To Be Returned to Originator

DRIVER COPY

FILE COPY

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#### VEHICLE CONDITION REPORT

1. This form is to be completed daily. Instructions on form must be followed. The original copy of the inspection report will be retained for 3 months from the date of preparation.
2. Each driver will complete and sign a report for each day the particular vehicle is operated, identifying any defect/deficiency.
3. In two-driver operations, only one driver needs to sign the report if both agree as to the defects. If there is disagreement, state the disagreement in "remarks/other defects" and the disagreeing driver should sign in that area.
4. If there are no defects or deficiencies, driver will indicate by writing "NONE" in "remarks/other defects" and sign the report. No additional notations nor signatures are required.
5. If there are defects, the mechanic who affects the repair or qualified supervisor initials "defect corrected," signs and dates.
6. If a qualified mechanic or supervisor determines that correction is not required or necessary, then this individual initials "defect correction unnecessary," signs and dates. Note that whoever certifies "defect correction unnecessary" is the sole individual responsible for the safety of the driver, vehicle, cargo in this instance. Therefore, be sure of what you certify in any case.
7. A legible copy is placed in the cab for the next driver of the vehicle.
8. Before operating a motor vehicle, the next driver must review the legible copy of the last written Vehicle Condition Report and verify that the safety defects/unsafe condition have been corrected, then sign and date the report. The "yes" block should be checked in this case. The "no" block should be checked if defects are uncorrected.
9. If the management/mechanic certifier determines that "defect correction is unnecessary" and the new/next driver disagrees, the condition should be inspected and condition certified/corrected by a certified mechanic.
10. The legible copy of the report must accompany the vehicle during the next driver tour of duty. There is no further retention or filing requirement for the legible copy except for the next day/tour of duty the vehicle is operated.

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## **CHAPTER 5**

# **BASIC DRIVER SKILLS**

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## BASIC DRIVER SKILLS

### Introduction

The objective of the driver trainer is to insure that each individual driver candidate trained and qualified by him is a safe, professional driver. This requires a driver not only skilled in the mechanical operation of his equipment but also able to inspect equipment properly. The stage for the training and qualification of a driver candidate is set by the conduct of the driver trainer, established by the thoroughness of the pre-trip inspection, and cemented by the skills gained during basic operating techniques and obstacle course training.

This section will provide you with fundamentals to train and prepare a driver candidate for his basic responsibilities as a new driver for your company.

### Conduct of the Driver Trainer in the Vehicle

Since much depends on the mannerism of the trainer while training and riding with a driver candidate or in-service driver, the following points should be considered in order to establish a professional relationship between the driver trainer and the driver candidate in an atmosphere conducive to good training and learning.

1. Be friendly and put your driver at ease.
2. Examine the driver's operators license to be sure it is current and valid for the equipment to be used.
3. Explain the purpose of the check ride and, if necessary, review procedures of the check ride.
4. Demonstrate everything you expect the driver to do during his check ride.
5. Give all instructions and directions well in advance of execution.
6. Be patient. It could be a new experience for the driver.
7. Use praise if merited.
8. Obtain driver's confidence before undertaking any corrective measures.
9. Criticize constructively when needed.
10. Instill respect for the vehicle and what it can and cannot do.
11. Ask for any questions the driver may have.
12. Check: *If the trainee hasn't learned, the trainer hasn't taught.*

### Basic Operating Techniques — Guide

This is a detailed example of basic vehicle operating techniques. Basic demonstration and practice should be conducted on the off-highway training course. The driver-trainer should demonstrate the procedures for starting and operating a vehicle of the type that the trainee will be expected to drive. The trainee should be in the cab observing the trainer as he demonstrates each step. Then the trainee should get behind the wheel and go through the same steps while the trainer rides with him. Prior to driving exposure in traffic, each trainee should be given enough practice in these basics to become at ease behind the wheel and proficient in the starting, shifting and stopping routines, to the satisfaction of the trainer.

*This outline is based on a diesel powered tractor-trailer unit. If other equipment is used, the outline should be modified as necessary to fit the characteristics of the vehicle operated. The pre-driving vehicle inspection should be followed prior to daily operation and after lengthy shut-down during the day.*

## 1. Starting the engine

(check manufacturer's instructions)

### A. Pre-starting procedures

1. After adjusting your seat, adjust mirrors to give driver best visibility. Mention that each driver must do this himself and should get in the habit of checking his mirror adjustment each time before he starts the engine. Proper adjustment of the mirrors will enable the driver to see the rear corners of his trailer just inside the lower corners of the mirrors. For proper adjustment, the tractor and trailer must be in a straight line. Diagrams of proper mirror adjustment follow this chapter.
2. Be sure parking brake is firmly set.
3. Check "Stop" and "Emergency Stop" controls to see that they are in operating position.
4. Press clutch pedal down only to within one inch or so of floor to disengage clutch. Pressing it down completely will burn up the clutch brake. Be sure transmission is in neutral. (Disengaging clutch reduces load on starter. Clutch should be kept depressed and disengaged until engine is running smoothly.)

### B. Starting Procedure

**NOTE:** If starting aid such as intake air pre-heating (glow plug) or quick start vapor such as ether is used, use only as described by manufacturer or supplier.

1. Depress accelerator halfway and engage starter quickly. Release starter as soon as engine fires.
2. If engine does not start within 10-15 seconds, turn off starter and wait a few seconds before trying again. (Continuous cranking of starter may damage it.)
3. Adjust choke or prime for gasoline engine, but if engine does not start readily, look for the cause rather than continue to crank the starter motor.

### C. After Starting

1. When engine starts, release accelerator and adjust throttle to run engine at approximately 1000 RPM. (This will vary with different engines.)
2. Check oil pressure gauge, and if pressure is not indicated immediately, shut off engine and seek the cause.
3. Run the engine without racing until the coolant warms. (Note: See Chapter 4 — Pre-Trip Inspection.)

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## 2. Putting the Vehicle into Motion

- A. Depress the clutch pedal to disengage clutch. Be careful of clutch brake.
  - B. Shift transmission into lowest gear.
  - C. Release parking brake.
  - D. Be sure clutch is fully engaged before you step on the accelerator.
  - E. With clutch fully released speed up enough to avoid lugging the engine.
  - F. As vehicle gains proper RPM for that gear, release the accelerator and depress the clutch pedal at the same time, shift into neutral, advance to second speed. (Check manufacturer's instructions for *double clutching*.) Repeat this operation until vehicle is operating in the proper gear for the load and grade.
- NOTE:** Demonstrate *smooth acceleration*. Sudden over-acceleration is a shock to drive components.

Demonstrate shift sequence for the particular transmission or combination in this truck.

Demonstrate effect of *lugging* and *over speeding* of engine.

If required, *double clutching* is a means of bringing the speed of transmission parts into synchronization so that the shift can be made without clash.

- 1. Depress clutch pedal and shift to neutral. (Be careful of clutch brake.)
  - 2. Let up clutch and accelerate engine (for down-shift) or allow engine to slow down (upshift) until engine speed matches road speed or gear to be used.
  - 3. Depress clutch and complete shift. (Be careful of clutch brake.)
- Explain that with the many shift splits in today's gears it is not generally necessary to run engine up to governed speed in each gear.
  - Explain how the Tachometer registers engine speed in revolutions per minute. It is a guide for shifting and helps the driver prevent excessive engine speed by using engine as brake when descending steep grades.
  - Explain the best cruising speed and most efficient RPM according to manufacturer's instructions. This provides for fuel economy and gives the driver reserve horsepower to overcome changing wind or terrain conditions.
  - Explain the theory behind the high torque and low RPM diesel engines. (Better torque plus the wider RPM range gives better performance, better fuel economy and improved engine life.)

## 3. Steering

- A. Explain and demonstrate "off-track" which causes the rear wheels to turn inside the front wheels when making a turn. The longer the distance between front and rear wheels, and the sharper the turn, the greater is the "off-track." Show how driver keeps toward the

center of the road on a right turn to keep his rear end from running off the road. Show how the truck must be kept toward the outside of a left curve or turn to keep the rear end from cutting short into opposing traffic.

- B. Explain the sketch effects of understeer and oversteer on trucks and combinations. Understeer is the tendency of a truck or tractor/trailer to travel to the *inside of a turn*. Oversteer is the tendency to travel to the *outside of a turn*. Since a tractor and trailer are really two vehicles, it is possible for a tractor to have oversteer and its trailer to have understeer. Understeer/oversteer are affected by the combination effects of road surface-grade-slope, load characteristics, fifth wheel setting, etc.
- C. *Room to cut in* — Demonstrate how, because of the greater length of a tractor semi-trailer, the driver must allow considerably greater distance for cutting back into line ahead of a slower vehicle or for cutting into the curb for parking.
- D. Point out the differences in backing a non-articulating (stiff) truck with trailer and a tractor/trailer combination. In a stiff truck, you back in the direction the steering wheel is turned. The opposite is true with a tractor/trailer combination because the rear axle of the tractor acts like the front axle of the trailer.

## 4. General

- A. *Sluggish feeling* — Explain that because of greater size and weight, the tractor semi-trailer may seem sluggish in comparison to a straight truck or a passenger automobile. Because of this, more time and distance must be allowed for acceleration, passing and stopping. Also, when climbing grades, the vehicle loses speed and requires earlier shifting of gears. The tractor semi-trailer usually requires a lower gear than a straight truck needs for the same grade. To avoid stalls, lugging the engine and clashing gears, the driver must understand the need to shift down properly on hills and grades.
- B. *Keep her steady* — The best drivers avoid erratic movements. They anticipate the need to slow down or stop and ease off the accelerator while preparing to brake smoothly. Show how to accelerate smoothly and gradually. Show how to maintain steady progress by steady acceleration on rough pavement and by steady braking on downgrades.

## 5. Braking

- A. Demonstrate the use of all braking techniques.
  - Use of engine as brake on down grades.
  - Use of engine retarders.
  - Service (foot) brakes.
  - Hand brake.
  - Spring brake.
  - Tractor protection valve.
  - Tractor front wheel limiting valve.
  - Independent trailer control.

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- B. Point out technique of stopping vehicle.
  - Leave clutch engaged as long as possible.
  - Brake steadily but not sharply.
  - As vehicle comes to a stop, disengage clutch and ease brake momentarily to avoid jerk, then re-apply brake to hold vehicle in place.
- C. Remind trainee of importance of signals.
- D. Emphasize importance of downshifting on down-grade to use engine braking power and to reserve brakes for snubbing or making full stop.

#### 6. High-torque, Low RPM Diesel Engines

- A. Demonstrate and emphasize the performance of the high torque, low RPM engines as well as the RPM range available in each gear on upshifting and downshifting on level road as well as up and down hill.
- B. Demonstrate and explain the acceleration capability and range in each gear.

#### 7. Road Test Forms

Example forms for tractor/trailer and straight truck road tests follow this chapter. Various types of these tests for every need are available from commercial vendors.

#### 8. Night Driving

Night driving techniques and problems should be demonstrated and explained prior to operation by the trainee. A sketch of proper headlight use follows this chapter.

#### 9. Safe Driver Achievement Test

When the driver has been trained and meets criteria for a safe driver, he may take the safe driver achievement test which offers to you — the driver trainer — a measure of how well you have prepared your new driver for the road. The test at the end of this chapter is general in nature and will give an indication of how well-rounded your safe driver really is.

#### 10. Professional Driver Training Courses

Courses such as the National Safety Council's Defensive Driving Course (DDC) should be considered as excellent courses for all drivers. Safe driving techniques and appreciation gained from DDC can be interwoven in all instruction and training.

#### The Tractor/Trailer Connection

Make sure the trainee understands each step in its proper order and its importance. Demonstrate and explain each step. Closely supervise and control each new driver until desired proficiency is gained.

##### A. How to Hook Up Equipment

- 1. Be sure the trailer is at proper height to engage the fifth wheel.

- 2. Block trailer wheels. Check and remove kingpin lock.
- 3. See that fifth wheel lock on tractor is open.
- 4. Back tractor close to trailer. Set emergency brake.
 

*NOTE: Keep center of fifth wheel in line with center of nose of trailer. Fifth wheel must be tilted back.*
- 5. Connect brake hoses and electrical wiring.
- 6. Get into cab, set trailer brakes and back tractor *slowly* under trailer with center of fifth wheel lined up with trailer kingpin. Continue backing until kingpin is engaged and locked. Occasionally an angle hook-up is necessary when it is impossible to back the tractor straight to the trailer. In making an angle hook-up, go through the same procedure as in making a straight hook-up. Be most careful to avoid pushing the trailer sideways.
- 7. Test coupling several times by easing tractor forward with trailer brakes set.
- 8. Get out of cab and under trailer and check coupling by looking at the fifth wheel lock to make sure the hook has engaged the kingpin. (After dark or when it is dark indoors, you should use a flashlight to be sure.) Secure fifth wheel lock with a safety catch or pin, as required.
- 9. Remove the chocks or blocks from under the trailer wheels.
- 10. Change tractor protective valve to emergency position to activate trailer brakes. Check by pulling gently in low first gear. This shows without uncoupling that the tractor protection valve is working properly.
- 11. If coupling is secure, crank up trailer supports or dolly. Be sure they are up as far as they will go. Fasten crank handle to hook.

##### B. How to Uncouple Equipment

- 1. Park unit in proper area, on firm and level ground. Tractor and trailer should be left in a straight line.
- 2. Set tractor parking brake. Set tractor protection valve lever in emergency position.
- 3. Chock or block trailer wheels.
- 4. Lower trailer support shoes/wheels all the way down. Make sure ground is firm enough to hold trailer; if not, place planks or similar material underneath the shoes/wheels to prevent sinking.
- 5. Disconnect the emergency air line from the trailer emergency coupling. Connect to dummy coupling on the rear of tractor.
- 6. Disconnect the service air line from the trailer service coupling and connect to dummy service coupler on rear of tractor cab.
- 7. Disconnect light cord from trailer and fasten to rear of tractor cab.
- 8. Pull the fifth wheel lock lever into open position to disengage fifth wheel jaws from the trailer kingpin.
- 9. Pull tractor forward slowly to permit trailer support

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- wheels to take up load gradually and with a minimum amount of shock.
10. When tractor is disconnected, pull it clear of semi-trailer.

## Obstacle Course Training and Driving Technique Improvement Practice

### Introduction

Safe driving depends on thorough familiarity with the equipment operated and practical experience behind-the-wheel. Any training should acquaint the new driver with the equipment he will operate and provide him the practice he needs to develop the skills required to become a qualified driver. His driving skills can be rapidly developed under controlled conditions through obstacle course training such as described below. Such training can be conducted at any point where basic driving techniques permit.

This material emphasizes the fundamentals of safe driving. It can also be used as a refresher training course to help experienced drivers perfect their skills and to eliminate any bad habits they may have acquired.

In setting up this training, the following points must be considered:

1. **Vehicles** — Are there vehicles in good working order available for use by the trainees? The vehicles used for training should be the same type of safe equipment the trainee will drive when he is qualified. It also must be in a safe operating condition and have a good appearance.
2. **Driving Area** — Where will driving practice sessions be conducted?
  - A. Off-highway practice requires an area approximately 200' x 250' to accommodate large vehicles. (See diagrams and discussion of suggested layouts at the end of this section. This is a modified course, similar to those found in truck roadshows. There are others. Select the best for you and alter to fit available space.) If suitable space is not available and cannot be obtained on company property, consider using some other facility in the area, such as a fairground, airport or parking lot of a stadium, school or church.
  - B. On-highway practice. A course should be selected that gives the trainee a good sample of the road and traffic conditions he will face when he is in actual operation. The course should be at least five miles long and should include: 5 right turns, 5 left turns, 5 stop signs, 5 traffic lights, 5 grades, 5 curves and 1 or 2 railroad crossings.
  - C. Delivery practice. Train and test each driver to meet those conditions he could encounter during typical delivery services. Simulate delivery conditions.
3. **Equipment** — Is suitable material on hand to conduct the training? Following is a suggested list of basic materials that the driver-trainer will need:

A. Administration — clipboard, pencils, Road Test form in Traffic, Daily Vehicle Condition report forms.

### B. Testing Devices

- Yardsticks — to measure distances in various exercises. It is helpful if the yardsticks are painted different colors — say red, white, blue — in 6-inch increments to simplify measuring.
- Tumbling Cylinder — to measure smoothness of operation. This is a 2" diameter wooden cylinder about 7" high. It is placed on end in the center of a 12" square of 1/2" plywood which rests on the floor of the truck. A 6" square of fine sandpaper in the center of the board will prevent the cylinder from sliding.
- Rubber balls and tees — to make "curb" lines for testing of steering skills. These can be made from hard rubber casters. The balls should be attached to the casters with a 2'-3' length of cord so the ball will not roll too far if bumped. (Paper cups filled with sand can be used instead of the rubber balls and tees.)
- Barrels, drums or rubber highway cones — to provide obstacles for steering tests. Cardboard or fiber drums are preferred. If steel drums are used, the tops should be wrapped with burlap or heavy paper to prevent damage to the vehicle when drums are bumped.

C. **Course Layout Materials** — to erect barricades to simulate alleys, docks, posts, etc. A complete kit using aluminum tubing and all necessary fittings may be available from your insurance company, or a similar kit can be produced locally from 1-1/2" o.d. x .058" aluminum tubing or wooden 2" x 4 boards. Seventy-eight pieces 6 ft. long and 16 pieces 8 ft. long are required, plus 106 special "split T" joints are needed. The tubing is cut into the following lengths:

|           |                                  |
|-----------|----------------------------------|
| 42        | 4'4" pieces for stanchions       |
| 84        | 1'8" pieces for stanchion braces |
| 12 pieces | 8' long for barricade crossbars  |
| 4 pieces  | 8' long for curbing sections     |
| 5         | 10" pieces for curbing uprights  |
| 5         | 6" pieces for curb footings      |

See diagram after this section that shows how these pieces can be combined to provide the "obstacles" needed.

- Sandbags, approximately 12" x 12" filled with about 25 lbs. of sand are useful to prop up the barricades and prevent them from being accidentally tipped or blown over. But don't make the base too heavy or the tubing will be broken or badly bent when hit by a vehicle, instead of merely tipping over.
- Brightly colored flags are useful to make stanchions more visible.

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- Water-base paint can be used to help make stop lines, etc., on concrete or asphalt.

It is recommended that the various exercises that follow be taught in the same sequence as presented here, but this is not essential. If, for example, training is conducted with more than one vehicle, simultaneous practice on different phases of driving can be handled at separate locations on the driving course. However, each man should be thoroughly trained in each step of this practical course, and adequate records must be kept to measure and report progress.

Upon completion of this practical training, the new driver will be ready for his over-the-road training and final qualification tests.

#### *Driving Skill Exercises*

A number of field exercises have been developed over the years for automobile driver training courses, teen-age roadeo contests and truck roadeo competitions. The driver trainer should select those exercises which are most applicable to his operations for both training and testing.

The exercises which have persisted through many trials and course revisions are those which most closely simulate vehicle maneuvers common to everyday driving experience. These include, in the case of truck operations, parallel parking, alley dock parking, stopping and straight line steering. Weaving exercises, such as offset alley and serpentine maneuvers which require use of mirrors, assist in developing skills, especially in backing.

For purposes of illustration, five exercises are discussed separately here with suggested dimensions and necessary equipment.

#### *Straight Line Steering*

This exercise measures the knowledge of a driver as to the position of his wheels and his ability to control steering.

Evidence of steering ability or the lack of it is obtained by use of raised markers which will move upon contact by a wheel. Most practical is the use of sponge rubber balls mounted on tees.

The driver is required to run the right, or blind-side, wheels of his vehicle between pairs of balls located at intervals of 20 or 25 feet between the pairs, depending upon the layout. The critical pair is in the center where the spacing between them is the width of the truck's tire track (or rear-duals) plus 4 inches. For a variation of the test, a driver may be required to back through the balls.

Demerits may be assessed for each instance of touching or running over a ball or for passing completely around any set of balls.

#### *Serpentine*

Many variations of weaving-manuever exercises are possible. Perhaps the simplest to erect is formed with three barrels in line about 30 feet apart.

Measuring the driver's proficiency in steering and in gauging clearances by use of side mirrors is the purpose of this exercise.

Drivers are required to drive forward and then back through in a continuous motion. Demerits may be assessed for each instance of stopping, hitting a barrel or stanchion or crossing side limit lines.

#### *Diminishing Clearance and Stop Line*

This exercise provides two tests of a driver's ability. First, it provides some measure of a driver's knowledge of the lateral limits of width of his vehicle, particularly in a tight spot. Second, it measures the driver's knowledge of the frontal limits of his vehicle and his depth perception.

To complete the exercise, a driver must negotiate the 75 foot long clearance alley diminishing to a width 2 inches wider than his vehicle, without striking the side stanchions. He then proceeds in a continuous motion to the stop line, decelerating smoothly so as to stop with the front bumper centered over the line.

The exercise may be scored by charging one demerit for each instance of striking stanchions and for each instance of stopping more than one time in the entire maneuver. Position scoring at the stop line can be based on 6 inch intervals or zones. When a driver goes beyond the stop line, he should be given maximum demerits to emphasize the importance of controlled braking. In such cases the stop line could be referred to as a pedestrian or another vehicle ahead.

#### *Parallel Parking*

Perhaps the most practical of all exercises, the parallel parking layout determines a driver's ability to park parallel to the curb in a space 5 feet longer than his truck or trailer. Considerable skill in use of the accelerator, brake and mirrors is needed.

The driver is required to back his vehicle into a stall from the blind side without striking the end barricades or curb. Scoring is usually based on demerits for striking barricades and curb, the number of pull-ups required to complete the maneuver and the final positioning of the vehicle relative to the curb. Curb position scoring can be determined by use of 6 inch intervals, or zones, measured from the tires to the curb.

#### *Alley Dock*

This exercise simulates a simple truck bay at a loading dock. It is a valuable measure of the driver's depth perception and ability to utilize mirrors in backing.

The driver is normally required to back from the blind side into the dock, which is about 1 foot wider than his vehicle, and stop within a given distance of the rear barricade or deck edge, with 6 inches as the usual allowable limit. A dock area depth of 20 feet is sufficient for test purposes. Demerit scoring is based on the number of pull-ups required and the number of times the barricades are hit, side or rear. Final positioning may be scored to 6 inch intervals or zones taken from the rear barricades to the tailgate.

#### *Scoring*

Keeping scores on exercises is entirely optional. To some degree, a score measures the proficiency of a driver's perfor-

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mance, but it is not necessarily a reliable yardstick. Some drivers perform a given exercise with great difficulty owing to nervous tension caused by test conditions or any number of other emotional or psychophysical factors. The important effect in obstacle testing is that the driver executes a defined skill exercise which should emphasize to him the importance of controlled steering, coordinated shifting and braking, proper use of accessories such as mirrors, and the operational and design limits of his vehicle.

Suggestions for scoring demerits were made under the various exercises. If scoring offers to be of advantage in screening drivers, a simple check sheet can be used, similar to that below. Any arbitrary total point score can be established for each exercise, from which demerits may be subtracted for a net earned score.

Following completion of the obstacle course exercises, brief the drivers on the performance.

### SUGGESTED SCORING SHEET

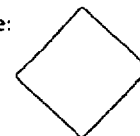
| OBSTACLE COURSE           |                    |                |                   |
|---------------------------|--------------------|----------------|-------------------|
| DRIVER: _____             |                    |                |                   |
| EXERCISE                  | NUMBER<br>DEMERITS | ZONE<br>NUMBER | TOTAL<br>DEMERITS |
| 1. _____                  | _____              | _____          | _____             |
| 2. _____                  | _____              | _____          | _____             |
| 3. _____                  | _____              | _____          | _____             |
| 4. _____                  | _____              | _____          | _____             |
| 5. _____                  | _____              | _____          | _____             |
| GRAND TOTAL DEMERITS      |                    |                | =====             |
| Total Allowable Score     |                    | _____          |                   |
| Less Grand Total Demerits |                    | _____          |                   |
| Net Earned Score          |                    | _____          |                   |

Note: Each demerit equals 5 points  
 Zone 1.0 to 6 inches equals 0 demerits  
 Zone 2.6 to 12 inches equals 5 demerits  
 Zone 3.12 to 18 inches equals 15 demerits  
 Zone 4. over 18 inches equals 20 demerits

### SAFE DRIVER ACHIEVEMENT TEST

The multiple choice questions which follow are to test your general knowledge of safe driving. Your score will be the number of right answers you choose, so answer every question. There is only one best answer for each question. Clearly mark the letter of the best answer on a separate answer sheet.

- Controlling accidents is primarily the job of:
  - the police
  - the Legislature
  - the insurance companies
  - the drivers
- The major cause of fatal accidents is:
  - mechanical failure
  - road conditions
  - human error
  - weather conditions
- In order to drive safely you must:
  - operate the vehicle defensively
  - be flexible in driving situations
  - have your eyes tested regularly
  - keep your vehicle in good running order
- Besides knowing how to operate a motor vehicle, driving requires all the following except:
  - knowing the local traffic laws
  - knowing the name of your insurance company
  - having a valid driver's license
  - having a properly registered vehicle
- In driving "providing a margin of safety" means:
  - willingness to yield the right of way
  - driving 5 m.p.h. below the speed limit
  - demanding no more than your legal rights
  - allowing sufficient following distances
- About what percentage of motor vehicle fatalities in rural areas are pedestrians?
  - 10%
  - 20%
  - 30%
  - 40%
- A driver cannot drive safely:
  - at dawn or dusk
  - in a snowstorm
  - after drinking two beers
  - in an old car
- Defensive driving is:
  - avoiding involvement in accidents by anticipating accident-producing situations
  - avoiding traffic violations
  - driving at moderate speeds
  - driving between rush hours
- This shape of sign might indicate:
  - school ahead
  - speed limit
  - one-way street
  - no parking
- If pedestrian is crossing the street when the traffic light ahead of you turns green, you must:
  - move ahead so that you will not delay traffic
  - wait until the pedestrian has crossed in front of you
  - wait until the pedestrian has reached the sidewalk
  - blow your horn to warn the pedestrian



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11. Markings are used primarily to:
  - (a) direct the flow of traffic
  - (b) prevent passing maneuvers
  - (c) indicate the middle of the road
  - (d) indicate curves
12. Which one of these four rules for better seeing habits is incorrectly stated:
  - (a) aim high
  - (b) get the big picture
  - (c) concentrate on the traffic ahead
  - (d) leave yourself an "out"
13. When you extend your arm straight out of the driver's window, you are signalling that you are about to:
  - (a) stop
  - (b) turn left
  - (c) turn right
  - (d) back-up
14. At unposted intersections, which of these has the right of way:
  - (a) emergency vehicle on call
  - (b) tow truck
  - (c) snow plow
  - (d) school bus
15. Two "Stop" streets intersect at right angles. "A" and "B" reach the intersection at the same time. "A" is driving west. "B" is driving north.
  - (a) "A" stops. "B" continues
  - (b) "B" stops. "A" continues
  - (c) Both stop. "B" yields
  - (d) Both stop. "A" yields
16. Reaction distance is the distance a vehicle travels between the time the:
  - (a) brakes are applied and the vehicle stops
  - (b) danger is seen and the brakes are applied
  - (c) danger arises and the danger is seen
  - (d) danger arises and the vehicle stops
17. It is a clear day. The road is dry. You are driving at 50 m.p.h. How many car lengths should you allow between your vehicle and the vehicle immediately ahead?
  - (a) 5
  - (b) 10
  - (c) 15
  - (d) 20
18. It is a rainy day. You are driving at 40 m.p.h. How many car lengths should you allow between your vehicle and the vehicle immediately ahead?
  - (a) 4
  - (b) at least 8
  - (c) 12
  - (d) 16
19. It is cold and has been snowing for some time. You are driving at 30 m.p.h. How many car lengths should you allow between your vehicle and the vehicle immediately ahead?
  - (a) 3
  - (b) at least 6
  - (c) 9
  - (d) 12
20. The traffic maneuver requiring the most critical degree of judgement is:
  - (a) entering a limited access highway
  - (b) backing out of a blind driveway
  - (c) making a left turn
  - (d) overtaking and passing another vehicle
21. The only time you may pass on the right is when:
  - (a) the driver ahead persists in driving in the left lane
  - (b) traffic in the right lane is moving faster
  - (c) the driver ahead is turning left
  - (d) the right lane is clear of traffic
22. You are approaching an intersection where the green light has just turned in your favor. Another driver is approaching the intersection rapidly from your right. Should you:
  - (a) speed up to get across the intersection safely, first
  - (b) blow your horn to warn other driver
  - (c) slow up and be prepared to stop if necessary
  - (d) continue on the green light at your same speed
23. If you double your speed, the force of impact is multiplied by:
  - (a) 2
  - (b) 4
  - (c) 8
  - (d) 16
24. Before you back:
  - (a) walk around your vehicle and look in your rearview mirror
  - (b) look in your rearview mirror
  - (c) blow your horn
  - (d) all of the above
25. You should lower your headlights when approaching another vehicle within:
  - (a) 0-500 feet
  - (b) 500-1000 feet
  - (c) 1000-1500 feet
  - (d) 1500-2000 feet

### SAFE DRIVER ACHIEVEMENT TEST

- |       |       |
|-------|-------|
| 1. d  | 14. a |
| 2. c  | 15. c |
| 3. a  | 16. b |
| 4. b  | 17. a |
| 5. d  | 18. b |
| 6. b  | 19. b |
| 7. c  | 20. c |
| 8. a  | 21. c |
| 9. a  | 22. c |
| 10. b | 23. c |
| 11. a | 24. d |
| 12. c | 25. b |
| 13. b |       |

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## ROAD TEST — TRACTOR TRAILER

DRIVER'S NAME \_\_\_\_\_

TERMINAL \_\_\_\_\_ DATE \_\_\_\_\_

### ITEMS TO CHECK

|   | Excellent                | Average                  | Below Avg.               | Poor                     |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>PRE-TRIP PROCEDURES</b>                            |                          |                          |                          |                          |
| Pre-trip inspection .....                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Start & warm up procedure .....                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>MAKING UP UNIT</b>                                 |                          |                          |                          |                          |
| Hooking up tractor trailer .....                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Unhooks & drops trailer properly .....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Blocks trailer: hook up, unhooking, unloading .....   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>DRIVING HABITS</b>                                 |                          |                          |                          |                          |
| Looks behind & signals before pulling from curb ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Maintains a safe stopping distance .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Varies speed to meet traffic conditions .....         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Approaches intersections cautiously .....             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Yields to pedestrians .....                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Travels more slowly in curb lane .....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Applies brakes smoothly (avoids fanning) .....        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Makes smooth stops .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Keeps both hands on wheel when not shifting .....     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Obeys speed limits .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>PASSING HABITS</b>                                 |                          |                          |                          |                          |
| Drives in right lane except to pass .....             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Passes others safely .....                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Passes parked vehicles safely .....                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Allows adequate room for complete pass .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>TURNS</b>  |                          |                          |                          |                          |
| Signals & assumes proper lane for turn .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Completes turn properly & smoothly .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>SHIFTING OF GEARS &amp; USE OF CLUTCH</b>          |                          |                          |                          |                          |
| Starts in low gear .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper use of clutch .....                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper shifting up & down range .....                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper engine RPM & torque maintained .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>COMMUNICATES WITH OTHERS</b>                       |                          |                          |                          |                          |
| Use of turn signals .....                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Taps horn to alert others of his moves .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Makes eye contact .....                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

TOTAL POINTS: POOR 40-99 BELOW AVG. 100-119 AVERAGE 120-139 EXCELLENT 140-160

VEHICLE # \_\_\_\_\_ MILES COVERED \_\_\_\_\_ TIME \_\_\_\_\_

### ITEMS TO CHECK

|  | Excellent                | Average                  | Below Avg.               | Poor                     |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>BACKING</b>                                       |                          |                          |                          |                          |
| Avoids unnecessary backing .....                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dismounts to check safety to rear .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Uses mirrors properly .....                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Backs properly .....                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>PARKING</b>                                       |                          |                          |                          |                          |
| Stops off traveled portion of highway .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Parks without hitting curb .....                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sets emergency brake & secures vehicle .....         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| On hills, turns wheels into curb .....               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shuts off engine .....                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>SEEING HABITS</b>                                 |                          |                          |                          |                          |
| Reads traffic lights well in advance .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Evaluates traffic pattern early .....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Looks for cross traffic, starts on green light ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Use of mirrors .....                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>GENERAL KNOWLEDGE</b>                             |                          |                          |                          |                          |
| Appearance of driver .....                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Knowledge of DOT & Co. safety rules .....            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Knowledge of emergency procedures .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Accepts, & tries to correct poor habits .....        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| No. Excellent _____ @ 4 points _____                 |                          |                          |                          |                          |
| No. Average _____ @ 3 points _____                   |                          |                          |                          |                          |
| No. Below Avg. _____ @ 2 points _____                |                          |                          |                          |                          |
| No. Poor _____ @ 1 point _____                       |                          |                          |                          |                          |
| <b>TOTAL SCORE</b> _____                             |                          |                          |                          |                          |
| EXAMINER'S SIGNATURE _____                           |                          |                          |                          |                          |

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# ROAD TEST — STRAIGHT TRUCK

DRIVER'S NAME \_\_\_\_\_

TERMINAL \_\_\_\_\_ DATE \_\_\_\_\_

## ITEMS TO CHECK

|   | Excellent                | Average                  | Below Avg.               | Poor                     |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>PRE-TRIP PROCEDURES</b>                            |                          |                          |                          |                          |
| Pre-trip inspection .....                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Start & warm up procedure .....                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>DRIVING HABITS</b>                                 |                          |                          |                          |                          |
| Looks behind & signals before pulling from curb ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Maintains a safe stopping distance .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Varies speed to meet traffic conditions .....         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Approaches intersections cautiously .....             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Yields to pedestrians .....                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Travels more slowly in curb lane .....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Applies brakes smoothly .....                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Makes smooth stops .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Keeps both hands on wheel when not shifting .....     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Obeys speed limits .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>PASSING HABITS</b>                                 |                          |                          |                          |                          |
| Drives in right lane except to pass .....             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Passes others safely .....                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Passes parked cars safely .....                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Allows adequate room to complete pass .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>TURNS</b>  |                          |                          |                          |                          |
| Signals & assumes proper lane for turn .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Completes turn properly & smoothly .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>SHIFTING OF GEARS &amp; USE OF CLUTCH</b>          |                          |                          |                          |                          |
| Starts in low gear .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper use of clutch .....                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper shifting up & down range .....                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Proper engine RPM & torque .....                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>COMMUNICATES WITH OTHERS</b>                       |                          |                          |                          |                          |
| Use of turn signals .....                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Taps horn to alert others of his moves .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Makes eye contact .....                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

VEHICLE # \_\_\_\_\_ MILES COVERED \_\_\_\_\_ TIME \_\_\_\_\_

## ITEMS TO CHECK

|  | Excellent                | Average                  | Below Avg.               | Poor                     |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>BACKING</b>                                       |                          |                          |                          |                          |
| Avoids unnecessary backing .....                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dismounts to check safety to rear .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Uses mirror properly .....                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Backs properly .....                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>PARKING</b>                                       |                          |                          |                          |                          |
| Stops off traveled portion of roadway .....          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Parks without hitting curb .....                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sets emergency brake & secures vehicle .....         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| On hills, turns wheels into curb .....               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Keeps doors or gates closed & locked .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shuts off engine .....                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>SEEING HABITS</b>                                 |                          |                          |                          |                          |
| Reads traffic lights well in advance .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Evaluates traffic pattern early .....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Looks for cross traffic, starts on green light ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Use of mirrors .....                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>GENERAL KNOWLEDGE</b>                             |                          |                          |                          |                          |
| Appearance of driver .....                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Knowledge of DOT & Co. safety rules .....            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Knowledge of emergency procedures .....              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Listens to instructions attentively .....            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Accepts, & tries to correct poor habits .....        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

No. Excellent \_\_\_\_\_ @ 4 points \_\_\_\_\_

No. Average \_\_\_\_\_ @ 3 points \_\_\_\_\_

No. Below Avg. \_\_\_\_\_ @ 2 points \_\_\_\_\_

No. Poor \_\_\_\_\_ @ 1 point \_\_\_\_\_

**TOTAL SCORE** \_\_\_\_\_

EXAMINER'S SIGNATURE \_\_\_\_\_

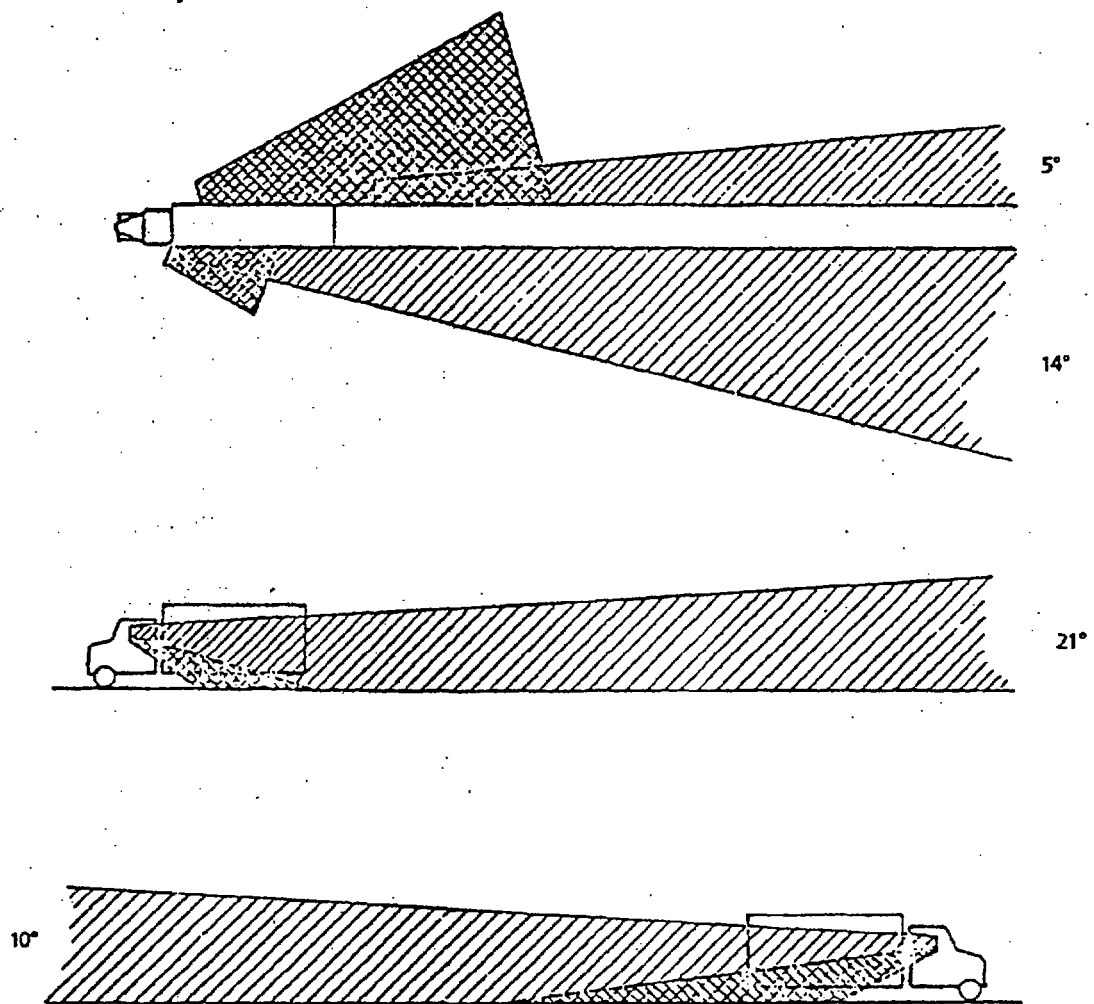
TOTAL POINTS: POOR 40-99 BELOW AVG. 100-119 AVERAGE 120-139 EXCELLENT 140-160



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## PROPER MIRROR SETTINGS



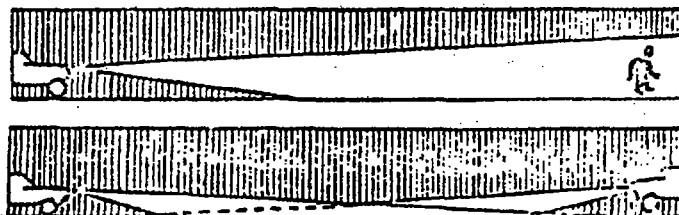
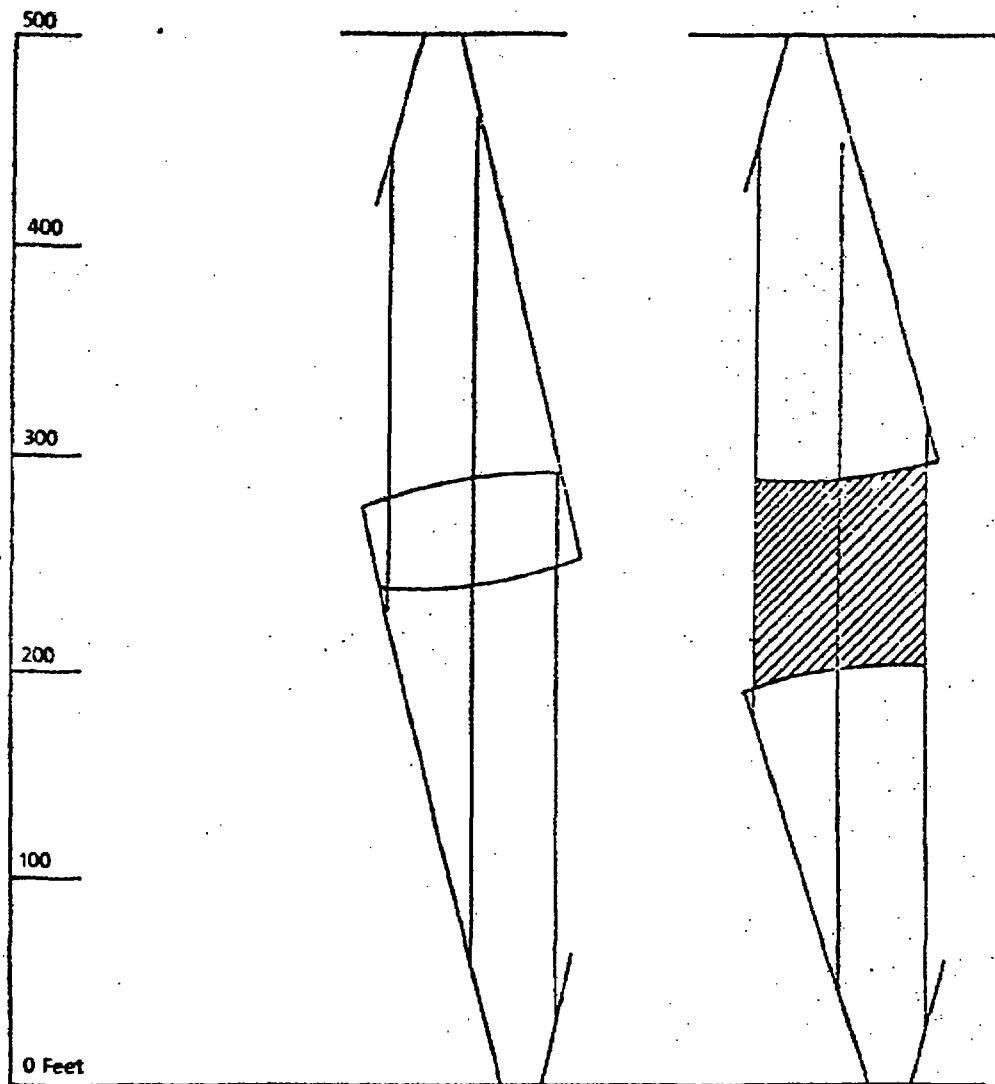
 — Plain  
 — Convex

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## PROPER USE OF HEADLIGHTS



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## **CHAPTER 6**

# **SAFE DRIVING — A FUNDAMENTAL ATTITUDE**

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## **SAFE DRIVING — A FUNDAMENTAL ATTITUDE**

*(This material might be duplicated and used as a hand-out to trainees)*

We all know that driving consists of guiding a vehicle safely and efficiently along a path selected by the driver. Learning the basic skills of vehicle control is very important in driving, but our goal is to be more than a vehicle operator. We want to become totally professional drivers.

A professional driver is one who can drive from one place to another in a safe and efficient manner. The efficient driver has the ability to complete his trip with minimum effort and time. The safe driver is one who can complete his trip without crashing into something. He has the ability to avoid dangers or hazards. A professional driver must be able to see objects and situations in and around his intended path of travel. He must also be able to interpret those situations and determine the nature and seriousness of the hazards he will have to deal with.

Who will benefit from your practicing the fundamentals of safe driving?

First, you and your family will benefit. You don't want to injure yourself or someone else, and your family doesn't want you to, either. You're important to your family and they want you safe, healthy and working.

Secondly, the general public will benefit. We don't want you to endanger the lives of the public by careless driving. We must share the road with other drivers and be courteous to them.

Third, the company will benefit. Reducing accidents will reduce needless costs and insure that we have a company to work for in the future. Remember, you represent the company when you're out in their truck. Everything you do while driving reflects on the company. You either help build goodwill or you damage our public relations.

*What is Defensive Driving?* Definition:

Defensive Driving is the technique of avoiding dangerous situations by anticipating the hazards caused by other drivers, pedestrians or weather and road conditions, and taking the necessary action to prevent an accident.

The key word is "anticipate." By this we mean to expect or look ahead for hazards. Training is required to acquire the skill of anticipating the hazards, recognizing them as they develop and taking the necessary action.

To develop a fundamental attitude which will apply to every situation, various "Driving Systems" have been outlined. These include basic skills necessary for defensive driving. Following are two examples.

The system known as the "Smith System — the Five Keys to Space Cushion Driving" was developed by Harold L. Smith, a driver training consultant. His system is concerned with the placement of the vehicle in traffic, with an alert use of the eyes, with the automatic assessment of all driving situations before or as they arise — not afterwards, when panic actions must be taken.

Here are the five keys:

### **1. AIM HIGH IN STEERING**

Your eyes should be leading your vehicle down the road-way at least 8 to 12 seconds ahead at city speeds. You don't look at the toes of your shoes when you walk. You usually look about 25 feet ahead of your walking path. You must have a steering path picked out several hundred feet ahead when driving a motor vehicle at 25 MPH. **DO NOT BE GUILTY OF LOW AIM STEERING. AIM HIGH IN STEERING!**

### **2. GET THE BIG PICTURE**

Use your eyes to GET THE BIG PICTURE. Getting the big picture means seeing everything related to your total traffic picture. In the city, watch all objects at least a block ahead. Out of the city, watch at least half a mile ahead.

Few people realize that we see clearly only through a small cone of central eyesight. When you look 100 feet ahead, all you see with this central eyesight is an area 5 feet in width; at 1,000 feet, it is only 52 feet wide. Most objects are first detected by your fringe vision — upper, lower or side sight — which acts as a magnet for central vision.

### **3. KEEP YOUR EYES MOVING**

That's the only way to get the big picture. Staring at one object prevents you from seeing the big picture. Move your eyes at least every two seconds and check your mirrors at least every five seconds. The Keep Your Eyes Moving rule simply means that as long as your wheels are moving, so should your eyes be moving. When your eyes stop moving and the vehicle continues to move, there are moments in which you are approaching disaster.

### **4. LEAVE YOURSELF AN OUT**

Watch for your way out of an emergency situation. Keep a safe distance behind the vehicle ahead and allow space on one or both sides to go to in case it is needed to avoid a collision.

Another way of expressing it is not to let your wheels get ahead of your eyes. An accident is almost always an unexpected event. It is true that if you are expecting an accident, you will never have one.

### **5. MAKE SURE OTHERS SEE YOU**

Use turn signals, lights and horn to be sure all other drivers see what you are doing. Don't perform a maneuver unless you are 100% certain it is safe.

At the same time we are improving our seeing habits, we should learn WHAT to search for and identify. When you get right down to it, you cannot avoid what you haven't found and identified. The following is one system used by Liberty Mutual Insurance Company. Smith's system and Liberty Mutual's system, as well as others, provide a guide to approach driving with the proper attitude — then NO hazardous condition will be a surprise.

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## 1. EXPAND YOUR LOOK-AHEAD CAPACITY

The future is influenced by what is happening right now, up ahead. Have foresight. Know that present action can eliminate future trouble and accidents. This is the art of good timing. You can tell that a driver is not using this look-ahead capacity when he speeds up to a red light and has to screech to a halt to avoid rear-ending the vehicle ahead.

## 2. SIZE UP THE WHOLE SCENE

The more traffic and road conditions you recognize, the less chance there is of making the wrong decision. The conditions in front, to the side, and to the rear may all affect the situation in a few seconds which may become an accident if one is not practicing Defensive Driving.

You're not able to **SIZE UP THE WHOLE SCENE** when you follow too closely, when you find yourself having to make sudden stops or hard turns, or when you keep running into traffic delays. So, eliminate the need for split-second decisions. Keep yourself constantly informed by sizing up the whole scene.

## 3. SIGNAL YOUR INTENTIONS EARLY

Even good decisions are not fool-proof if we don't let others know our intentions about the actions we've planned to take. To insure success of the action, the decisions many times require communication with others — the driver ahead — the driver behind — an unwary pedestrian — a child playing in the street — an oncoming cyclist. Signaling changes in movement should be automatic. Develop it into such a habit pattern that you would signal if you were on a deserted highway. If you don't develop this into such a habit, you may forget to signal when you need it most, when you are busy with other problems in heavy traffic.

## 4. PLAN AN ESCAPE ROUTE

Making a decision that leaves you without an alternative is many times like picking your own poison. It's pretty hard to choose between two consequences when you don't want either one of them to happen. But it's easy to be quick and decisive when a planned escape path, a saving decision, is open to you. Some preventive actions are: **KEEP A STOPPING SPACE — BE PREPARED TO YIELD — STAY OUT OF TAILGATING TRAPS — TIME YOUR PASSING MOVES.**

## 5. TAKE DECISIVE ACTION

This is the pay-off point — the action taken as the result of recognizing all the conditions through the **LOOK-AHEAD CAPACITY** and **SIZING UP THE WHOLE SCENE** and having **A PLAN FOR AN ESCAPE ROUTE.**

If you follow this driving pattern you improve your judgment. When you practice it on the road, you improve your skill. When you conscientiously follow it, you shape your **ATTITUDE** and drive maturely and safely.

When you think about all the traffic controls, roadway characteristics and other drivers, vehicles and pedestrians

you encounter in a day, very few of these will cause you any real problems if you practice defensive driving. What we must do is collect evidence for judging the importance of a hazard. We need to use a system so we can pick out the most important hazards for us and then deal with them. One successful and easy system is called the **IPDA**.

We must first *Identify* the hazard.

We must *Predict* what the hazard will do.

We must *Decide* what action we must take.

We must *Act* on our decision.

One way to avoid collisions is to prevent ourselves from being surprised. Surprise is involved in practically every collision. Drivers who anticipate trouble early enough stay out of collisions. They give themselves enough time, precious time, to make proper adjustments. The answer to being surprised is to *identify* hazards early enough and *predict* what they will do and how they will affect you.

After you have predicted what will happen, you can then *decide* what steps you will need to take to avoid the hazard and *act* on your decision.

Up to now you may have found some of these ideas and guides for evaluating hazards interesting, but you may also be thinking to yourself, "Who in the world would have time for all that while driving? That's a lot to do!" And you are right! But let's not forget the power of the human brain.

The human brain is like a giant computer. With practice, some of these things may take only a fraction of a second. But our brain, like a computer, is of little value if it hasn't been fed the right information.

At one time or another, you have probably worked a puzzle. After you have once solved a puzzle, what happens the next time you try it? It then becomes very easy and takes just a fraction of the time you first needed. This is because you can quickly identify the clues and know what to expect. You no longer have to rely on trial and error methods.

Another interesting thing happens. Other similar puzzles become easier to work the first time you try them.

This is also true of traffic situations. Once you identify and predict traffic situations, it actually becomes easy. With practice you will be able to handle the common situations almost automatically. This will give you more time for dealing with the complex or unusual traffic situations.

All accidents can be blamed on one of three things: human failures, mechanical failures or an act of God. An act of God accounts for less than 1% of all accidents. This would be an accident such as a sign blowing over onto a truck.

Mechanical failures cause as little as 3% of all accidents, such as loss of steering or brake failures. That leaves the rest of the accidents, 96%, due to human failures. These include mental or physical disabilities or lack of driving skills. We expect all of our drivers to be mentally and physically fit, and when you have finished training you will have the driving knowledge and skill necessary to drive defensively.

But what about the other drivers on the road — drivers you will meet? Many of them lack one or more of the three essentials of good driving — they are unfit mentally, physically or in lack of adequate driving knowledge. Occasionally

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they lack all three! That's why Defensive Driving is so important. By *anticipating* the hazards caused by these unskilled or incapable drivers, you can take the necessary action to avoid an accident.

We have discussed good seeing habits and how to anticipate and identify hazards, then predict what they will do and make a decision based on our prediction as to what action we must take to avoid the hazard. Let's now take a look at some faulty seeing habits that can lead to accidents. It is very interesting to note that most accidents happen in clear, dry weather, on straight roads, in light traffic, to sober, well-intentioned drivers who have excellent past driving records. So, what happened? They were distracted, and the distractions caused them to fail to see the dangerous situation that developed into an accident.

*Distractions fall into five groups:*

*Route problems:* Distracted by looking for a road sign or street address.

*Mental disturbances:* Such as day dreaming or letting irritations occupy our minds so that even if our eyes are taking in the pictures, our minds aren't paying attention and receiving the message.

*Scenery:* Distracted by a view that captures our attention and holds our eyes too long, such as a fire, pretty girl or another accident.

*In the vehicle:* Distractions within your own car or cab, like a bee or staring at a fuel gauge too long at the wrong time.

*Unfamiliar driving tasks:* Distractions caused by a new expressway, icy roads or different traffic signals in a strange state.

Knowing what these distractions might be will help us avoid them. But we also have to learn how to use good seeing habits and practice them constantly so we can avoid getting caught by distractions and can anticipate hazards.

### **SPECIFIC DRIVER RESPONSIBILITIES**

We have learned the importance of anticipating dangerous traffic situations and taking action to avoid them. We have also learned that by keeping our eyes moving and getting *the entire scene* we will see an early warning of almost every hazard.

While we are reading and interpreting the messages our mind is receiving, we must also be sending out our own signals so that others are told what we are planning to do. This is the concept of *Communications*. Whenever our plan of action involves a change of direction or speed, other drivers and pedestrians must be warned. Others cannot read our minds.

#### *Signs, Signals and Pavement Markings*

The familiar signs, signals and markings along our streets and highways carry a message for us. These are messages that are easy to read. Used properly they can be a helpful aid. (Chapter 8 — Rules and Regulation — details most of the present-day markings and the regulations related to them.)

*Traffic signs:* Most states have adopted standard shapes, colors and symbols so that we can understand their impor-

tant messages in a quick glance. These signs are placed by traffic safety engineers. They use the signs to communicate a warning to you. By recognizing these signs you'll be prepared to meet the hazardous condition indicated ahead. Remember that these signs can only *assist* you. **REMEMBER** — The presence or absence of a sign in no way relieves you of your responsibility for safe driving, but watching signs will make it easier for you to live up to your responsibility.

*Traffic signals:* Traffic signals are not as standardized as other signs. You may see them at corners or hung over intersections. Some of them will have turn arrows or delays that others don't have. But in all of them, red means stop, yellow means caution and green means go, if clear. Traffic signals must always be obeyed unless a traffic officer has taken control of an intersection.

*Pavement markings:* The striping of roads and streets has not been fully standardized, either, so you must become familiar with the markings in any area through which you drive. Because highway authorities recognize that differences in markings can cause confusion, you will usually see explanatory signs. Be sure you *read and heed* the sign message.

#### *Action Signals*

Signs, signals and markings give us a steady flow of incoming messages. There are other signals that we also use while driving. These are *action signals*.

*Turn indicators* (and, infrequently, hand signals) are an important part of communicating intentions. This is good communication. We can't talk to other motorists, but a flick of a switch shows them our interest. If possible, we can reinforce the message with a proper hand signal. Observe the turn signals of other motorists and learn what they intend to do. Signals should be given 200-300 feet in advance.

There are some other ways to communicate, too. *Stop signals* are essential to safe driving. By touching your brake you can flash your stop light as an early warning of planned stopping or slowing. If possible, you should also use a hand signal to warn other motorists that you are about to stop.

The *horn* is still another method of communicating. It can be used to warn other motorists or pedestrians of your presence and to get their attention. Be careful not to startle others with your horn as this could be dangerous. But in a passing situation, for example, you should use the horn to catch the attention of the motorist ahead so that he will be aware you are pulling out to pass.

The *position of our vehicle* can be a way to communicate our intention. If we are going to turn left, for example, we should be well positioned in the left lane well ahead of the turn. And by watching how other motorists are positioning themselves, we can anticipate their actions.

#### *Avoiding Accidents*

With all these different ways to communicate, accidents should be almost totally eliminated — but they are not. Every day, all across the nation, there are thousands of accidents. Are these "unavoidable" accidents? The experts say *no, definitely no*.

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Most accidents are collisions and most collisions result from an error or failure on the part of the drivers involved. This indicates that a time sequence is involved where a situation gradually develops so that the accident becomes inevitable. If the situation could have been anticipated, or if proper action could have prevented the collision, the accident should properly be called "avoidable."

Let's look at an example. Let's say that you are driving down a highway approaching an intersection. You see a driver on the cross road approaching the same intersection. He is supposed to stop but he doesn't seem to be slowing down. If you reach the intersection at the same time, you will have a collision. Would you call it "unavoidable" just because you assumed he would stop — or if you had failed to see him? You might want to, but you would know that it was really avoidable if you had taken early action by anticipating the hazard and predicting what he would do.

An expert driver notices that oncoming vehicles are using their windshield wipers. What does this tell him? He knows there is or has been a shower just ahead. The highway could be slick. He slows down accordingly and avoids the "unavoidable" skid that might otherwise occur.

The expert driver has learned from experience to avoid the unavoidable; this involves using his eyes. The expert driver learns to see important clues and tip-offs that give him information an amateur doesn't see.

One danger we haven't touched on is the danger of false signal. A most common example is a turn indicator flashing on a car that has no intention of making a turn, or a hand signal that isn't a hand signal, but just a careless motorist waving his arm or resting it in the breeze. By observing the movement of the vehicle, any steering movement can be detected. Some motorists, for example, will veer in the direction opposite to that in which they are planning to turn. This may be a leftover from the days when a car didn't have the short steering radius most common today. But even in this example you have an early warning if you are observant.

#### *Driver Responsibilities*

Every professional driver accepts the responsibility of his vehicle, cargo and driving. Here are some rules to help prepare for safe operation.

1. Know your equipment and pre-trip it thoroughly. Also, throughout the day, check your unit for defects to help insure safe operation. At completion of work day, prepare written vehicle condition report.
2. Know and be familiar with local, State and Federal regulations which apply to your operation.
3. Keep yourself physically fit and mentally alert. Get plenty of rest prior to your tour of duty. Do not use nor have in your possession narcotics, alcohol or any stimulants or depressing drugs.
4. Always have your driver's license and DOT physical card in your possession and be sure that all permits, registration plates and placards that may be required are displayed.
5. Keep windshields, rear view mirrors, marker lenses and

lights clean. Check your vehicle for defects in steering gear, tires, brakes, lights, reflectors, windshield wipers and horn. Be sure your vehicle is equipped with safety devices as required: fire extinguishers, reflector triangles and pertinent company equipment.

6. Do not carry unauthorized passengers.
7. Permit an engine to warm up before moving a vehicle. Do not race a cold engine. Also, allow an engine to idle before shutting off to permit slow cooling.

#### *Driving with Courtesy*

Courtesy is being considerate of and to others. Any driver who is truly courteous does himself a favor by lessening the likelihood of being in an accident situation.

Following are a few rules of courtesy to help keep you from provoking situations in which an accident might occur while driving.

1. Give proper signals well in advance of changing lanes or turning so other drivers have advance notice of your intentions and can allow for them. Be sure to turn off signals after they have served their purpose.
2. Pass or turn in such a manner that other drivers are not crowded. Use rear view mirrors well in advance of such moves.
3. Be patient and be sure you have plenty of room before pulling out from intersection.
4. Give the right-of-way cheerfully when the other driver seems uncertain or appears intent on taking it.
5. Give the other drivers plenty of room to pass.
6. Watch out for pedestrians, particularly children and the elderly, in crosswalks and during traffic light changes. When driving in cities, proceed in areas of parked cars as if you expect a child to dart out from between them at any time.
7. Keep your temper, stay relaxed and don't let yourself get upset by "the other guy." If the "other guy" is intent on taking the road, let him have the road. It will still be there after he is gone.

#### *Additional Driver Responsibilities*

1. When beginning a shift, even though the last driver has checked the truck on the finish of his run, you must pre-trip it. *The driver on duty is always responsible for the condition of the equipment when it leaves the terminal.*
2. Drivers shall report to their supervisors, in writing, all defects in equipment. It is always the responsibility of the professional driver to insure and maintain the safe operation of his unit.

#### *Night Driving*

When training for night driving, it is very important to point out the additional safeguards that need to be used to attain the maximum of safety.

1. You should check your headlights and cab lights regularly to see that they (a) are properly adjusted, (b) have

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clean lenses, (c) all filaments will light. You should likewise check your trailer lights, stop and turn signals and reflectors.

2. You should drive your vehicle at a speed consistent with its braking ability and the degree of visibility afforded by your headlights. Be cautious of vehicles parked at the side of the road or on the shoulder. Be cautious of vehicles displaying only one headlight.
3. Your speed should be reduced when you are confronted by bright lights of an oncoming vehicle. You should dim your lights for oncoming traffic.
4. Use low beams when driving through a city or town and turn your parking lights on at once when parking. *Do not drive with just your parking lights.*
5. Use low beams at dusk so that oncoming drivers and pedestrians can see you.

#### *Winter Driving*

New drivers as well as veterans need to be made aware of the special care and attention required for driving in winter conditions. Snow and freezing rain create problems which are not present in normal driving conditions. Decreased traction and poor visibility are the main causes of winter driving problems.

Special attention should be given to the ice patches on and under bridges, on curves and on expressway ramps, even though the road may be clear in other places. Note that hydro-planing also requires special attention year-round. Remember, snow and ice are conditions, but it is the driver's responsibility to adjust to the conditions.

1. Clean all windows fully.
2. Start slowly — fast starts only spin the wheels.
3. Adjust your speed to road conditions.
4. Before entering traffic, try the road surface by light brake

applications. Feel how your unit reacts.

5. Brakes should be applied in a manner suited for the equipment requirements.
6. Use the engine braking power by not disengaging the clutch too quickly when stopping.
7. Give yourself stopping distance — don't follow too closely. Be familiar with and use the minimum of two seconds.
8. Always ventilate the cab of your vehicle. Carbon monoxide is dangerous.
9. Beware of ruts and crowned roads, even at low speeds.

#### *Children*

The action of children, just like the wind, is unpredictable. The actions of a professional driver must be those of calculated prediction when children are present.

1. When driving through city or town, always be on the alert for children darting out from behind or between parked cars.
2. During school vacations, be cautious of children playing in or near the street.
3. Obey school speed zone limits. These limits should not be exceeded, and under certain traffic and weather conditions, the posted speed may be too fast.

#### **NOTE:**

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## **CHAPTER 7**

# **ROAD CONDITIONS AND WEATHER**

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## ROAD CONDITIONS AND WEATHER

(This material can be duplicated and used as a handout to trainees.)

### *Winter*

When approaching winter driving, probably the most important thing to do is get your mind prepared for the hazards that you will encounter. Keeping your mind ahead of the vehicle becomes more important during the winter months. The switch from relatively hazard-free summer driving to winter driving is perhaps the hardest adjustment to make.

One major change that must be made is to decrease speed and increase following distance. The two-second rule for following should be increased to at least five seconds or more, depending on conditions. The need for reducing speed should be obvious.

All acceleration and braking should be as smooth as possible. Spinning tires have no traction and give you no control. If they suddenly gain traction, it can send you careening out of control. When braking, be sure to use caution so that the brakes do not lock and send you out of control. Sliding wheels also have no traction.

Be sure to clean all windows thoroughly. You cannot hope to avoid what you cannot see. Also, clean off the rear view mirrors. It is important to get the entire picture to help avoid potentially hazardous situations. Also check and clean all lights and reflectors to assist your own visibility and your vehicle's visibility to others.

One often neglected but very important accessory is a set of tire chains. Tire chains increase traction up to 500% over good snow tires. The important thing to remember about tire chains is to put them on before you get stuck. They are of no use if they are left in the tool box.

The best way to avoid dangerous situations during the winter months is *not* to drive. Although this is not always possible, it is a decision that sometimes must be made. If conditions become so severe that it becomes more hazardous to keep driving, then you should get off the road completely and let conditions clear. Get as far off the roadway as possible and turn on your four-way flashers.

Any time of transition is particularly hazardous. It is infinitely more slippery at or near the freezing point than it is at 0°, for instance. When you notice that the temperature is between 28° and 34°, extra care must be exercised. A particularly hazardous condition is called "black ice." The roadway appears to be slightly damp but is in fact glare ice covered. This occurs at this transition time.

Driving in rainy weather can also be extremely hazardous. The first ten minutes of a rain storm can be the most dangerous because of the oil and grease that have built up on the road. When the rain water gets on this, it becomes extremely slippery. Another hazardous situation in the rain is hydroplaning. It can occur at speeds as low as 30 MPH. During hydroplaning, the entire vehicle is lifted off the surface of the road. Tire condition and speed are of the most concern to prevent this situation. If your tires are in good condition, they

will channel the water off. If they are smooth, they will lift more easily. Excessive speed will also tend to lift the tires more quickly.

For all inclement weather conditions, caution is the key word. You must adjust your driving speed and following distances for the existing conditions. Allow yourself extra room to stay out of dangerous situations. Turn on your headlights so that you can see and be seen. Don't assume that all other drivers on the road are looking out for you. You must look out for them.

### *Mechanical Breakdown*

Breakdowns are one of the most aggravating and costly occurrences you will encounter as a driver. They are also one of the easiest annoyances to avoid. A thorough daily pre-trip inspection will help avoid most common problems.

As you inspect your vehicle each day, be sure to document properly each and every defect each day until it is taken care of. If you are responsible for the maintenance of your own vehicle, insure that each problem is cared for. Don't allow a minor problem to become a major one.

Even if you do a thorough pre-trip each day, it is still possible that you may have a breakdown on the road. If you do, it is of primary importance to get the vehicle as far off the roadway as possible. Don't let your vehicle become a hazard to others on the road. If you feel your vehicle begin to falter, get off the road as soon as possible. Don't try to go "just a little farther" and then not get off the road at all.

After you have gotten off the roadway, it is important immediately to get out the emergency warning devices. Each truck should be equipped with the standard warning triangles. You should use the four-way flashers while you are placing the warning triangles and after they are placed, but you cannot use them in place of the triangles.

On a two lane road, one reflector should be placed ten feet in front of or behind the vehicle. One should be placed 100 feet ahead of the vehicle and one should be placed 100 feet behind the vehicle. On a one-way or divided highway, they should be placed at 10 feet, 200 feet and 300 feet behind.

The main idea here is properly to pre-trip and maintain the vehicle so that mechanical breakdowns can be held to a minimum. If you do break down, get as far off the road as possible and immediately place your emergency warning devices.

### *Accidents*

An accident is the one emergency that we all fear the most. Although an accident is a tragic occurrence, the tragedy may be compounded by improper actions after the accident. There are some specific procedures which can be followed.

The first step to take at an accident is to place flares or reflectors and protect the scene from approaching traffic. The unsuspecting driver may drive into the accident scene and add to the misfortune. Park your own vehicle well beyond the accident scene so that it cannot be a target for approaching vehicles.

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Cover the victims with a jacket or blanket and try to reassure them. Regardless of what you think about their condition, try to ease their minds and help them to be as comfortable as possible.

After you have taken care of the injured as best you can, then send for the ambulance, rescue squad, fire department and police. If you are sending another person, be sure to give him complete information about the location and the seriousness of the accident. Then have the person repeat the instructions to be sure that he understands them.

If you are involved in the accident, then also get word to your immediate supervisor. He will want to know the pertinent information so he can make the determination if any other agencies such as the E.P.A. need to become involved. Identify yourself to authorities.

Don't leave the scene of the accident unless it is absolutely necessary to get help. Your vehicle and your cargo are still your responsibility.

If involved, obtain statements from any observers present. Make no statements of liability to anyone at the scene. In fact, you should talk only to company personnel, law officers or representatives of your company's insurance firm.

Finally, as soon as you are reasonably able, make out an on-the-spot accident report while the details are still fresh in your mind. Make it as complete as you can. Include a scaled map, landmarks in the area and, especially, any contributing factors. Write anything you think may be pertinent. A report must be written for each accident, regardless of how slight the damage.

If you cannot assist at the accident scene, the best thing you can do is to go on. The more people on the scene, the greater the confusion.

If you are involved in an accident, keep a cool head. Do what you know how for the injured. Assist wherever you can, but if there is nothing for you to do, don't become an idle spectator. Be on your way if you are not involved.

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## **CHAPTER 8**

# **RULES AND REGULATIONS**

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purpose of receiving or discharging children.

#### Passing

*Never* attempt to pass another vehicle coming from the opposite direction unless you are 100% certain it is safe to do so. You must judge the speed of the oncoming vehicle and compensate his speed with yours. *Never* attempt to pass when nearing or crossing a street or highway intersection. *Never* attempt to pass when nearing a bridge, viaduct, tunnel or underpass. *Never* attempt to pass at or near a railroad crossing. *Never* attempt to pass on a hill, curve or any section of highway where you cannot see sufficiently far ahead. *Never* attempt to pass when the solid yellow line is on your side of the center line.

#### Federal DOT Regulations

##### 391.11 Qualifications of Drivers

- A. A person shall not drive a motor vehicle unless he is qualified to drive a motor vehicle. A motor carrier shall not require or permit a person to drive a motor vehicle unless that person is qualified to drive a motor vehicle.
- B. A person is qualified if he:
  1. is 21 years old.
  2. can read and speak English.
  3. can, by experience or training, safely operate the type of motor vehicle he drives.
  4. can determine whether the cargo he transports has been properly located, distributed or secured.
  5. is familiar with methods for securing cargo.
  6. is physically qualified every 2 years.
  7. has the proper valid license to operate the motor vehicle.
  8. has prepared and furnished a list of violations annually.
  9. has never been convicted of any criminal act or misconduct according to Section 391.15.
  10. has successfully completed a road test and holds certificate.
  11. has successfully completed a DOT Written Test and holds certificate.
  12. has furnished employer with an application of employment.

##### 391.41 Physical Qualifications for Drivers

- A. A person shall not drive a motor vehicle unless he is physically qualified to do so. He must also have on his person a copy of the medical certificate.
- B. To be qualified, he must:
  1. Have no loss of foot, leg, hand or arm.
  2. have no impairment of the use of a foot, leg, hand, fingers or arm that would impair his ability to control and safely drive a motor vehicle.
  3. have no medical history or diagnosis of diabetes currently requiring insulin for control.
  4. have no current clinical diagnosis of myocardial

infarction, angina, coronary insufficiency or any cardiovascular disease.

5. have no medical history or diagnosis of a respiratory dysfunction likely to interfere with his ability to control and drive a motor vehicle safely.
6. have no clinical diagnosis of high blood pressure consistently over 160/90 that will interfere with the safe operation of a motor vehicle.
7. have no medical history or diagnosis of rheumatic, arthritic, orthopedic, muscular, neuromuscular or vascular disease which interferes with his ability to drive a motor vehicle safely.
8. have no epilepsy or any condition likely to cause loss of consciousness or loss of ability to control a motor vehicle.
9. have no mental, nervous, organic or psychiatric disorder that will interfere with the ability to drive a motor vehicle safely.
10. must have at least corrected 20/40 visual acuity in each eye.
11. must be able to hear a forced whisper at no less than 5 feet with or without the use of a hearing aid.
12. does not use an amphetamine, narcotic or any habit forming drug.
13. has no clinical diagnosis of alcoholism.

#### Pre-Trip Inspection

##### 392.7 Equipment inspection and use

No motor vehicle shall be driven unless the driver thereof shall have satisfied himself that the following parts and accessories are in good working order:

Service brakes including trailer brake connections  
Parking (hand) brake  
Steering mechanism  
Lighting devices and reflectors  
Tires  
Horn  
Windshield wipers  
Rear vision mirrors  
Coupling devices  
All emergency equipment  
Fire extinguisher (charged)  
First aid kit  
Flares and flags  
Warning triangles

#### Driving of Vehicles

##### 392.10 Railroad grade crossings

A driver must stop within 50 feet of and not closer than 15 feet to the tracks, listen and look in each direction. When safe to do so, the driver may drive the vehicle across the tracks in a gear that permits the vehicle to complete the crossing without a change of gears. The driver must not shift gears while crossing the tracks.

Who must stop:

1. Every bus transporting passengers
2. Every motor vehicle transporting any quantity of

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chlorine

3. Every motor vehicle which is required to be placarded with one of the following markings:

A. Explosives A  
B. Explosives B  
C. Poisons  
D. Flammable  
E. Oxidizers  
F. Non-Flammable Gas  
G. Corrosives  
H. Flammable Gas  
I. Radioactive  
J. Dangerous  
K. Combustible  
(cargo tanks only)

4. Every cargo tank motor vehicle which is loaded or empty which must be placarded.

#### 392.16 Use of seat belts

A motor vehicle which has a seat belt installed at the driver's seat shall not be driven unless the driver has properly restrained himself with the seat belt assembly.

#### 392.22B Placement of warning devices

Whenever a vehicle is stopped upon the traveled portion of a highway or the shoulder of a highway for any cause other than necessary traffic stops, the driver shall, as soon as possible, place reflective triangles or reflectors in the following manner:

1. One at the traffic side of the stopped vehicle within 10 feet of the front or rear of the vehicle.
2. One at a distance of approximately 100 feet from the stopped vehicle in the center of the lane or shoulder occupied by the vehicle and in the direction of the other approaching vehicles.
3. One at a distance of approximately 100 feet from the stopped vehicle in the center of the lane or shoulder occupied by the vehicle and in the direction the traffic is moving.
4. Limited access highways should have all three placed at spaces listed in 1, 2, 3, — all in the direction the vehicle is approaching.

#### Prohibited Practices

##### 392.60 Unauthorized person not to be transported

Unless specifically authorized in writing to do so by the motor carrier, no driver shall transport any person or permit any person to be transported on any motor vehicle other than a bus.

#### Hours of Service of Drivers

##### Definitions

##### 395.2 On duty time

All time from the time the driver begins to work or is required to be in readiness to work until the time he is relieved from work and all responsibility for performing work.

Such as:

1. time waiting to be dispatched
2. all time inspecting or servicing motor vehicle
3. all driving time
4. all time other than driving time except while resting in sleeper berth
5. all time loading and unloading
6. all time involved relating to accidents
7. all time repairing or obtaining assistance for disabled vehicle
8. all time breaks and rest breaks

##### Driving time

The term *driving time* shall include all the time spent at the driving controls of a motor vehicle in operation.

##### 395.3 Maximum driving and on duty time

- A. No motor carrier shall permit or require any driver to drive more than 10 hours following 8 consecutive hours off duty, or drive for any period after having been on duty 15 hours following 9 consecutive hours off duty.
- B. No motor carrier shall permit or require any driver used by it to be on duty more than 70 hours in any 8 consecutive days.

##### 395.8 Instructions for use of driver's daily log

1. Driver's Daily Log. Except as provided under paragraph (T) of this section, every motor carrier shall require that a driver's daily log, Form MCS-59 set forth below, shall be made in duplicate by every driver used by him or it, and every driver who operates a motor vehicle shall make such a log. Failure to make logs, failure to make required entries therein, falsification of entries or failure to preserve logs shall make both the driver and the carrier liable for prosecution. Driver's logs shall be prepared and retained in accordance with the provision of Paragraphs 2-19 of this section.
2. Entries to be current. Drivers shall keep the log current to the time of the last change of duty status. The only permitted abbreviations are the names of the states.
3. Entries to be made by driver or co-driver only. Except the name of the principal place of business of the carrier may be printed, all entries shall be made by the driver in his own handwriting.
4. Date. Enter month, day and year for each calendar day on or off duty.
5. Total mileage. Total mileage entered shall be that mileage traveled while driving, on duty but not driving, and resting in sleeper berth during the day covered by the log. Mileage while driving shall be shown separately.
6. Vehicle identification. The carrier vehicle number or the state and license number or numbers of each vehicle or unit of a combination operated during

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- the calendar year shall be entered.
7. Name of carrier. The company name and principal place of business shall be shown on each log.
  8. Driver's signature. The driver shall certify to the correctness of the log by signing his first name and last name in full and his middle initial. Below the driver's signature, he shall list the initials and last name of each co-driver.
  9. Home terminal. The driver's home terminal address shall be shown and be that at which he normally reports for duty.
  10. Time base to be used. The log shall be prepared, maintained and submitted using the time standard in effect at the driver's home terminal for a 24-hour calendar day beginning at midnight.
  11. Line 1 Off Duty. Except for times spent resting in a sleeper berth, a continuous line shall be drawn between the appropriate time markers to record the period or periods of time when the driver is not on duty, not required to be in readiness to work, or is not under any responsibility for performing work.
  12. Line 2 Sleeper berth. A continuous line shall be drawn between the appropriate time markers to record the period or periods of time off duty resting in a sleeper berth.
  13. Line 3 Driving. A continuous line shall be drawn between the appropriate time markers to record the periods of time on duty driving a motor vehicle.
  14. Line 4 On duty not driving. A continuous line shall be drawn between the appropriate time markers to record the periods of time on duty not driving as in 395.2 On Duty Time.
  15. Remarks. The appropriate time marker and the name of the city, town or village, with state abbreviated, or place at or near which each change of duty occurs, shall be recorded, such as the place of reporting to work, starting to drive, on duty not driving and where released from work.  
Show the transportation performed each day by entering the shipping document number or numbers or name of a shipper and commodity. (A loading ticket which is numbered can also be used.)
  16. Total hours. The total hours in each duty status, off duty other than sleeper berth, off duty in sleeper berth, driving and on duty not driving shall be entered, the total of which entries shall equal 24 hours.
  17. Origin and destination. The name of the place where a trip begins and the final destination or farthest turn-around point shall be shown at the bottom of the log. If a driver departs from and returns to the same place on any day, the destination shall be indicated by entering the farthest point reached followed by the words "and return." If the trip requires more than one calendar day, the log for each day shall show the original and final destinations with the words "and return" shown on the last day's log.
  18. Filing driver's log. The driver shall forward, each day, the original log to his home terminal.
  19. Preservation of driver's log. Daily logs for each calendar month may be retained at the driver's home terminal until the 15th day of the succeeding calendar month and shall then be forwarded to the carrier's principal place of business where they shall be retained for 12 months from date of receipt. The driver shall retain a copy of each daily log for 30 days which shall be in his possession while on duty.

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**Operations**

| Section                   | Reference  | Page           | End |
|---------------------------|------------|----------------|-----|
| TRANSPORTATION            | 30.70      | 1              |     |
| Subject                   | Issue Date | Effective Date |     |
| DRIVER QUALIFICATION FILE | 9/15/85    | 9/15/85        |     |

GENERAL

The Code of Federal Regulations (CFR) Title 49, Section 391.51, requires each motor carrier to maintain a driver qualification file for each driver it employs.

DOCUMENTA-  
TION FORMS  
REQUIRED

1. For a regularly employed driver on a continuous basis hired before January 1, 1971.
  - a. Sec. 391.43 - Physical Examination Exhibit 1
  - b. Sec. 391.25 - Annual Review of Driving Record Exhibit 2
  - c. Sec. 391.27 - Record of Violations Exhibit 3
2. For a regularly employed driver on a continuous basis hired after January 1, 1971.
  - a. Sec. 391.43 - Physical Examination Exhibit 1
  - b. Sec. 391.25 - Annual Review of Driving Record Exhibit 2
  - c. Sec. 391.27 - Record of Violations Exhibit 3
  - d. Sec. 391.21 - Application for Employment Exhibit 4
  - e. Sec. 391.23- Check of Driving Record (for each state from which the applicant has ever obtained a driver's license.) Exhibit 5
 

Request from Previous Employer Exhibit 6
  - f. Sec. 391.31 - Record of Road Test Exhibit 7
 

Certification of Road Test Exhibit 8

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# PHYSICAL EXAMINATION OF DRIVERS

Name: \_\_\_\_\_ CHEM OP 30.70 Exhibit 1  
9/15/85 9/15/85  
Address: \_\_\_\_\_  
Social Security No.: \_\_\_\_\_ Date of Birth: \_\_\_\_\_ Age: \_\_\_\_\_

☐ New Certification

☐ Recertification

## HEALTH HISTORY

| Yes                      | No                       |   | Yes                      | No                       |  |
|--------------------------|--------------------------|---|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Head or spinal injuries.                    | <input type="checkbox"/> | <input type="checkbox"/> | Nervous stomach                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | Seizures, fits, convulsions, or fainting.   | <input type="checkbox"/> | <input type="checkbox"/> | Rheumatic fever.                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | Extensive confinement by illness or injury. | <input type="checkbox"/> | <input type="checkbox"/> | Asthma.  |
| <input type="checkbox"/> | <input type="checkbox"/> | Cardiovascular disease.                     | <input type="checkbox"/> | <input type="checkbox"/> | Kidney disease.                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | Tuberculosis.                               | <input type="checkbox"/> | <input type="checkbox"/> | Muscular disease.                                |
| <input type="checkbox"/> | <input type="checkbox"/> | Syphilis.                                   | <input type="checkbox"/> | <input type="checkbox"/> | Suffering from any other disease.                |
| <input type="checkbox"/> | <input type="checkbox"/> | Gonorrhea.                                  | <input type="checkbox"/> | <input type="checkbox"/> | Permanent defect from illness, disease or injury |
| <input type="checkbox"/> | <input type="checkbox"/> | Diabetes.                                   | <input type="checkbox"/> | <input type="checkbox"/> | Psychiatric disorder.                            |
| <input type="checkbox"/> | <input type="checkbox"/> | Gastrointestinal ulcer.                     | <input type="checkbox"/> | <input type="checkbox"/> | Any other nervous disorder.                      |

If answer to any of the above is yes, explain: \_\_\_\_\_

## PHYSICAL EXAMINATION

General appearance and development: Good: \_\_\_\_\_ Fair: \_\_\_\_\_ Poor: \_\_\_\_\_  
Vision: For distance: Right 20/\_\_\_\_ Left 20/\_\_\_\_ ☐ Without corrective lenses ☐ With corrective lenses if worn  
Evidence of disease or injury: Right: \_\_\_\_\_ Left: \_\_\_\_\_ Color Test: \_\_\_\_\_  
Horizontal field of vision: Right: \_\_\_\_\_ Left: \_\_\_\_\_  
Hearing: Right ear: \_\_\_\_\_ Left ear: \_\_\_\_\_ Disease or injury: \_\_\_\_\_  
Audiometric Test (complete only if audiometer is used to test hearing) decibel loss at 500 Hz \_\_\_\_\_  
at 1,000 Hz \_\_\_\_\_ at 2,000 Hz \_\_\_\_\_  
Throat: \_\_\_\_\_  
Thorax: Heart: \_\_\_\_\_ If organic disease is present, is it fully compensated? \_\_\_\_\_  
Blood pressure: Systolic \_\_\_\_\_ Diastolic \_\_\_\_\_  
Pulse: Before exercise \_\_\_\_\_ Immediately after exercise \_\_\_\_\_ Lungs: \_\_\_\_\_  
Abdomen: Scars \_\_\_\_\_ Abnormal masses \_\_\_\_\_ Tenderness \_\_\_\_\_  
Hernia: Yes \_\_\_\_\_ No \_\_\_\_\_ If so, where? \_\_\_\_\_ Is truss worn? \_\_\_\_\_  
Gastrointestinal: Ulceration or other disease: Yes \_\_\_\_\_ No \_\_\_\_\_  
Genito-Urinary: Scars \_\_\_\_\_ Urethral discharge \_\_\_\_\_  
Reflexes: Romberg \_\_\_\_\_ Pupillary \_\_\_\_\_ Light R \_\_\_\_\_ L \_\_\_\_\_  
Accommodation Right \_\_\_\_\_ Left \_\_\_\_\_  
Knee Jerks: Right: Normal \_\_\_\_\_ Increased \_\_\_\_\_ Absent \_\_\_\_\_  
Left: Normal \_\_\_\_\_ Increased \_\_\_\_\_ Absent \_\_\_\_\_  
Remarks: \_\_\_\_\_  
Extremities: Upper \_\_\_\_\_ Lower \_\_\_\_\_ Spine \_\_\_\_\_  
Laboratory and other Special Findings: Urine: Spec. Gr. \_\_\_\_\_ Alb. \_\_\_\_\_ Sugar \_\_\_\_\_  
Other laboratory data (serology, etc) \_\_\_\_\_  
Radiological data \_\_\_\_\_ Electrocardiograph \_\_\_\_\_  
General comments \_\_\_\_\_

(Date of examination) (Address of examining doctor) (Name of examining doctor)(Print)

(Signature of examining doctor)

NOTE: This section to be completed only when visual test is conducted by a licensed optometrist.

(Date of examination) (Address of optometrist) (Name of optometrist)(Print)

(Signature of optometrist)

## MEDICAL EXAMINER'S CERTIFICATE

I certify that I have examined \_\_\_\_\_ in accordance with the Federal Motor Carrier Safety Regulations  
(Driver's name)(Print)  
(49 CFR 391.41-391.49) and with knowledge of his duties, I find him qualified under the regulations.

☐ Qualified only when wearing corrective lenses.

☐ Qualified only when wearing a hearing aid.

**MKIL40595**

A completed examination form for this person is on file in my office at \_\_\_\_\_

(Address)

(Date of examination) (Name of examining doctor)(Print)

(Signature of examining doctor)

(Address of driver)

(Signature of driver)

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Nashua, New Hampshire 03060-1416 722-2848

BOOK No. 28

MK095005

MKIL189596

# INSTRUCTIONS FOR PERFORMING AND RECORDING PHYSICAL EXAMINATIONS

The examining physician should review these instructions before performing the physical examination. Answer each question yes or no where appropriate.

The examining physician should be aware of the rigorous physical demands and mental and emotional responsibilities placed on the driver of a commercial motor vehicle. In the interest of public safety the examining physician is required to certify that the driver does not have any physical, mental, or organic defect of such a nature as to affect the driver's ability to operate safely a commercial motor vehicle.

**GENERAL INFORMATION.** The purpose of this history and physical examination is to detect the presence of physical, mental, or organic defects of such a character and extent as to affect the applicant's ability to operate a motor vehicle safely. The examination should be made complete, and at least as complete as indicated by the attached form. History of certain defects may be cause for rejection or indicate the need for more certain laboratory tests or a further, and more stringent, examination. Defects may be recorded which do not, because of their character or degree, indicate that certification of physical fitness should be denied. However, these defects should be discussed with the applicant and he should be advised to take the necessary steps to insure correction, particularly of those which, if neglected, might lead to a condition likely to affect his ability to drive safely.

**GENERAL APPEARANCE AND DEVELOPMENT.** Note marked overweight. Note any posture defect, perceptible limp, tremor, or other defects that might be caused by alcoholism, thyroid intoxication, or other illnesses. The Motor Carrier Safety Regulations provide that no driver shall use a narcotic or other habit-forming drug.

**HEAD-EYES.** When other than the Snellen chart is used, the results of such test must be expressed in values comparable to the standard Snellen test. If the applicant wears corrective lenses, these should be worn while applicant's visual acuity is being tested. If appropriate, indicate on the Medical Examiner's Certificate by checking the box, "Qualified only when wearing corrective lenses." In recording distance vision use 20 feet as normal. Report all vision as a fraction with 20 as numerator and the smallest type read at 20 feet as denominator. Note ptosis, discharge, visual fields, ocular muscle imbalance, color blindness, corneal scar, exophthalmos, or strabismus, uncorrected by corrective lenses. Monocular drivers are not qualified to operate commercial motor vehicles under existing Motor Carrier Safety Regulation.

If the driver habitually wears contact lenses, or intends to do so while driving, there should be sufficient evidence to indicate that he has good tolerance and is well adapted to their use. The use of contact lenses should be noted on the record.

**EARS.** Note evidence of mastoid or middle ear disease, discharge, symptoms of aural vertigo, or Meniere's Syndrome. When recording hearing, record distance from patient at which a forced whispered voice can first be heard. If audiometer is used to test hearing, record decibel loss at 500 Hz, 1,000 Hz, and 2,000 Hz.

**THROAT.** Note evidence of disease, irreducible deformities of the throat likely to interfere with eating or breathing, or any "laryngeal" condition which could interfere with the safe operation of a motor vehicle.

**THORAX-HEART.** Stethoscopic examination is required. Note murmurs and arrhythmias, and any past or present history of cardiovascular disease of a variety known to be accompanied by syncope, dyspnea, collapse, enlarged heart, or congestive heart failures. Electrocardiogram is required when findings so indicate.

**BLOOD PRESSURE.** Record with either spring or mercury column type of sphygmomanometer. If the blood pressure is consistently above 160/90 mm. Hg., further tests may be necessary to determine whether the driver is qualified to operate a motor vehicle.

**LUNGS.** If any lung disease is detected, state whether active or arrested, if arrested, your opinion as to how long it has been quiescent.

**GASTROINTESTINAL SYSTEM.** Note any diseases of the gastrointestinal system.

**ABDOMEN.** Note wounds, injuries, scars, or weakness of muscles of abdominal walls sufficient to interfere with normal function. Any hernia should be noted if present. State how long and if adequately contained by truss.

**ASCARIS, WORMS.** If present, note location, if tender, and whether or not applicant knows how long they have been present. If the diagnosis suggests that the condition might interfere with the control and safe operation of a motor vehicle, more stringent tests must be made before the applicant can be certified.

**TUBERCULOSIS.** When noted, state where most pronounced, and suspected cause. If the diagnosis suggests that the condition might interfere with the control and safe operation of a motor vehicle, more stringent tests must be made before the applicant can be certified.

**GENITO-URINARY.** Urinalysis is required. Acute infections of the genito-urinary tract, as defined by local and State public health laws, indications from urinalysis of uncontrolled diabetes, symptomatic albuminuria in the urine, or other findings indicative of health conditions likely to interfere with the control and safe operation of a motor vehicle, will disqualify an applicant from operating a motor vehicle.

**NEUROLOGICAL.** If positive Romberg is reported, indicate degrees of impairment. Pupillary reflexes should be reported for both light and accommodation. Knee jerks are to be reported absent only when not obtainable upon reinforcement and as increased when foot is actually lifted from the floor following a light blow on the patella, sensory vibratory and positional abnormalities should be noted.

**EXTREMITIES.** Carefully examine upper and lower extremities. Record the loss or impairment of a leg, foot, toe, arm, hand, or fingers. Note any and all deformities, the presence of atrophy, semiparalysis or paralysis, or varicose veins. If a hand or finger deformity exists, determine whether sufficient grasp is present to enable the driver to secure and maintain a grip on the steering wheel. If a leg deformity exists, determine whether sufficient mobility and strength exist to enable the driver to operate pedals properly. Particular attention should be given to and a record should be made of any impairment or structural defect which may interfere with the driver's ability to operate a motor vehicle safely.

**SPINE.** Note deformities, limitation of motion, or any history of pain, injuries, or disease, past or presently experienced in the cervical or lumbar spine region. If findings so dictate, radiologic and other examinations should be used to diagnose congenital or acquired defects; or spondylolisthesis and scoliosis.

**RECTO-GENITAL STUDIES.** Diseases or conditions causing discomfort should be evaluated carefully to determine the extent to which the condition might be handicapping while lifting, pulling, or during periods of prolonged driving that might be necessary as part of the driver's duties.

**LABORATORY AND OTHER SPECIAL FINDINGS.** Urinalysis is required, as well as such other tests as the medical history or findings upon physical examination may indicate are necessary. A serological test is required if the applicant has a history of luetic infection or present physical findings indicate the possibility of latent syphilis. Other studies deemed advisable may be ordered by the examining physician.

**DIABETES.** If insulin is necessary to control a diabetic condition, the driver is not qualified to operate a motor vehicle. If mild diabetes is noted at the time of examination and it is stabilized by use of a hypoglycemic drug and a diet that can be obtained while the driver is on duty, it should not be considered disqualifying. However, the driver must remain under adequate medical supervision.

The physician must date and sign his findings upon completion of the examination.

## MINIMUM REQUIREMENTS OF SECTION 391.41

(a) A person shall not drive a motor vehicle unless he is physically qualified to do so and, except as provided in 391.67 has on his person the original, or a photographic copy, of a medical examiner's certificate that he is physically qualified to drive a motor vehicle.

(b) A person is physically qualified to drive a motor vehicle if he:

- (1) Has no loss of a foot, a leg, a hand, or an arm, or has been granted a waiver pursuant to Sec. 391.49;
- (2) Has no impairment of the use of a foot, a leg, a hand, fingers, or an arm, and no other structural defect or limitation, which is likely to interfere with his ability to control and safely drive a motor vehicle, or has been granted a waiver pursuant to Sec. 391.49 upon a determination that the impairment will not interfere with his ability to control and safely drive a motor vehicle;
- (3) Has no established medical history or clinical diagnosis of diabetes mellitus currently requiring insulin for control;
- (4) Has no current clinical diagnosis of myocardial infarction, angina pectoris, coronary insufficiency, thrombosis, or any other cardiovascular disease of a variety known to be accompanied by syncope, dyspnea, collapse, or congestive cardiac failure;
- (5) Has no established medical history or clinical diagnosis of a respiratory dysfunction likely to interfere with his ability to control and drive a motor vehicle safely;
- (6) Has no current clinical diagnosis of high blood pressure likely to interfere with his ability to operate a motor vehicle safely;

(7) Has no established medical history or clinical diagnosis of rheumatic, arthritic, orthopedic, muscular, neuromuscular, or vascular disease which interferes with his ability to control and operate a motor vehicle safely;

(8) Has no established medical history or clinical diagnosis of epilepsy or any other condition which is likely to cause loss of consciousness or any loss of ability to control a motor vehicle;

(9) Has no mental, nervous, organic, or functional disease or psychiatric disorder likely to interfere with his ability to drive a motor vehicle safely;

(10) Has distant visual acuity of at least 20/40 (Snellen) in each eye without corrective lenses or visual acuity separately corrected to 20/40 (Snellen) or better with corrective lenses, distant binocular acuity of at least 20/40 (Snellen) in both eyes with or without corrective lenses, field of vision of at least 70° in the horizontal meridian in each eye, and the ability to recognize the colors of traffic signals and devices showing standard red, green, and amber;

(11) First perceives a forced whispered voice in the better ear at not less than 5 feet with or without the use of a hearing aid or, if tested by use of an audiometric device, does not have an average hearing loss in the better ear greater than 40 decibels at 500 Hz, 1,000 Hz, and 2,000 Hz with or without a hearing aid when the audiometric device is calibrated to American National Standard, formerly ASA Standard 24.5-1951;

(12) Does not use an amphetamine, narcotic, or any habit-forming drug; and

(13) Has no current clinical diagnosis of alcoholism.

MK095006

MKIL40596

MKIL189597

## ANNUAL REVIEW OF DRIVING RECORD

NAME OF DRIVER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
(Number & Street) (City) (State) (Zip Code)

SOCIAL SECURITY NUMBER: \_\_\_\_\_ DATE OF EMPLOYMENT \_\_\_\_\_

INSTRUCTIONS TO CARRIER: Review the driving record of the employee in accordance with Section 391.25 and as outlined below. Complete the Certificate of Review as listed. Any remarks may be shown on the reverse side.

In accordance with Department of Transportation Section 391.25 a motor carrier shall, at least once every 12 months, review the driving record of each driver it employs to determine whether that driver meets minimum requirements for safe driving or is disqualified to drive a motor vehicle pursuant to Section 391.15.

In reviewing a driving record, the motor carrier must consider any evidence that the driver has violated applicable provisions of the Federal Motor Carrier Safety Regulations and the Hazardous Materials Regulations. The motor carrier must also consider the driver's accident record and any evidence that the driver has violated laws governing the operation of motor vehicles, and must give great weight to violations, such as speeding, reckless driving, and operating while under the influence of alcohol or drugs, that indicate that the driver has exhibited a disregard for the safety of the public.

### CERTIFICATE OF REVIEW

I have hereby reviewed the driving record of the above named driver in accordance with Section 391.25 and find that he (Check One)

| DATE  | NAME OF PERSON REVIEWING | Meets Minimum<br>Requirements for<br>Safe Driving | Is Disqualified to<br>drive a motor<br>vehicle pursuant to<br>Section 391.15 |
|-------|--------------------------|---|--|
| _____ | _____                    | _____   | _____  |
| _____ | _____                    | _____   | _____  |
| _____ | _____                    | _____   | _____  |

REMARKS TO BE MADE ON REVERSE SIDE CONCERNING DISQUALIFICATION

(This form is constructed to meet DOT requirements per Section 391.25)

MKIL40597

MK095007

MKIL189598

# ANNUAL REVIEW OF DRIVING RECORD

## REMARKS SECTION

### REMARKS — INITIAL REVIEW FOR 12 MONTH PERIOD

Date

|  | YES   | NO    |
|--|-------|-------|
| Company ID & Qualification Card Issued | _____ | _____ |
| Letter of Disqualification Issued      | _____ | _____ |

### REMARKS—SUBSEQUENT REVIEW DURING 12 MONTH PERIOD

Date

|  | YES   | NO    |
|--|-------|-------|
| Company ID & Qualification Card Returned | _____ | _____ |
| Letter of Disqualification Issued        | _____ | _____ |

MKIL40598



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Book No 7B

MK095008

MKIL189599

# CERTIFICATION of VIOLATIONS

**MOTOR CARRIER INSTRUCTIONS:** Each motor carrier shall, at least once every 12 months, require each driver it employs to prepare and furnish it with a list of all violations of motor vehicle traffic laws and ordinances (other than violations involving only parking) of which the driver has been convicted, or on account of which he has forfeited bond or collateral during the preceding 12 months. (Section 391.27)

**DRIVER REQUIREMENTS:** Each driver shall furnish the list as required by the motor carrier above. If the driver has not been convicted of, or forfeited bond or collateral on account of any violation which must be listed, he shall so certify. (Section 391.27)

I certify that the following is a true and complete list of traffic violations (other than parking violations) for which I have been convicted or forfeited bond or collateral during the past 12 months.

[illegible]

If no violations are listed above, I certify that I have not been convicted or forfeited bond or collateral on account of any violation required to be listed during the past 12 months.

Driver's License No. \_\_\_\_\_ State \_\_\_\_\_ Expiration Date \_\_\_\_\_

DATE OF CERTIFICATION:

(DRIVER'S SIGNATURE)

MOTOR CARRIER'S NAME)

MOTOR CARRIER'S ADDRESS

(REVIEWED BY: SIGNATURE)

TITLE



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MKIL40599

FORM NO. 12F

MK095009

MKIL189600

CHEM OP 30.70 Exhibit 4  
9/15/85 9/15/85

# McKesson

## Application for Employment

Name  
Position  
Applied For

Please complete fully and legibly

This company is an equal opportunity affirmative action employer. No question on this application is asked for the purpose of discriminating against any applicant's consideration for employment because of race, color, sex, age, national origin, handicap, or veteran status.

Date \_\_\_\_\_ Position Applied For \_\_\_\_\_ Location Preferred \_\_\_\_\_  
Available for Full Time \_\_\_\_\_ Part Time \_\_\_\_\_ Either \_\_\_\_\_ If part time, what hours or days do you prefer? \_\_\_\_\_

### Section A - Personal

Name, Last \_\_\_\_\_ First \_\_\_\_\_ Middle \_\_\_\_\_ Home Telephone No. \_\_\_\_\_  
Address, Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_ Business Telephone No. \_\_\_\_\_  
Social Security No. \_\_\_\_\_ If you are not a U.S. citizen, do you have a legal right to work in the US? Yes \_\_\_\_\_ No \_\_\_\_\_  
Can you furnish necessary documentation of right to work in the US? Yes \_\_\_\_\_ No \_\_\_\_\_ Salary Expected \_\_\_\_\_  
What led you to consider McKesson for employment? \_\_\_\_\_

Were you previously employed by McKesson? Yes \_\_\_\_\_ No \_\_\_\_\_ If so, Job Title: \_\_\_\_\_

Where and When?

MKIL40600

Relatives employed by McKesson and positions held \_\_\_\_\_

If under 18 can you furnish a work permit? Yes \_\_\_\_\_ No \_\_\_\_\_

PER-20181-801

MK095010

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**Section B—Work Experience** Please start with your present or last position. You may include paid or unpaid volunteer service and military work experience.

| Company or Organization                     | Address | Employed From | To                   | Title | Telephone Number |
|---|---------|---------------|----------------------|-------|------------------|
| Type of Business                            |         | Kind of Work  |                      |       |                  |
| Salary or Salary Range                      |         |               | Immediate Supervisor |       |                  |
| Supervisory Responsibility                  |         |               |                      |       |                  |
| Duties Performed or Major Responsibilities  |         |               |                      |       |                  |
| Reasons for Leaving or Considering a Change |         |               |                      |       |                  |

| Company or Organization                     | Address | Employed From | To                   | Title | Telephone Number |
|---|---------|---------------|----------------------|-------|------------------|
| Type of Business                            |         | Kind of Work  |                      |       |                  |
| Salary or Salary Range                      |         |               | Immediate Supervisor |       |                  |
| Supervisory Responsibility                  |         |               |                      |       |                  |
| Duties Performed or Major Responsibilities  |         |               |                      |       |                  |
| Reasons for Leaving or Considering a Change |         |               |                      |       |                  |

| Company or Organization                     | Address | Employed From | To                   | Title | Telephone Number |
|---|---------|---------------|----------------------|-------|------------------|
| Type of Business                            |         | Kind of Work  |                      |       |                  |
| Salary or Salary Range                      |         |               | Immediate Supervisor |       |                  |
| Supervisory Responsibility                  |         |               |                      |       |                  |
| Duties Performed or Major Responsibilities  |         |               |                      |       |                  |
| Reasons for Leaving or Considering a Change |         |               |                      |       |                  |

| Company or Organization                     | Address | Employed From | To                   | Title | Telephone Number |
|---|---------|---------------|----------------------|-------|------------------|
| Type of Business                            |         | Kind of Work  |                      |       |                  |
| Salary or Salary Range                      |         |               | Immediate Supervisor |       |                  |
| Supervisory Responsibility                  |         |               |                      |       |                  |
| Duties Performed or Major Responsibilities  |         |               |                      |       |                  |
| Reasons for Leaving or Considering a Change |         |               |                      |       |                  |

**MKIL40601**

MK095011

MKIL189602

**Section C - To Be Completed By Applicants For Positions Requiring The Use Of Motor Vehicles Only**

Do You Have A Valid Drivers License For This State?

Yes

No

If No Can You Obtain One?

Yes

No

**To Be Completed By Clerical/Secretarial Applicants Only**Typing  
SpeedMachines  
Model(s)

Yes

No

Can you Transcribe  
from a Dictation  
Machine?

Yes

No

How were Typing  
& Shorthand  
Speeds Determined?What Business Machines  
Can You Operate?**Section D - Educational Record**

Indicate

1

2

3

4

College

Approximate

Collegiate

Degrees(s)

Highest Grade

5

6

7

8

1

2

3

4

Grade

Completed

9

10

11

12

Average

Major

Minor

Fields

Extra-Curricular Activities in School Do not include any organization or membership that would indicate race, religion, age, sex, national origin, disability, veteran status or political affiliation

**Section E - Health**Do you have a physical or physical disability which would create a hazard to you or others, or which will require an accommodation to the job for which you are applying?  
Please describe any conditions or conditions for which you should not be considered for positions you cannot perform because of a physical or mental handicap.

Yes

No

**Section F - Security**

Have you ever been convicted of a felony?

Yes

No

If yes, please give details. A criminal record does not by itself bar a person from employment consideration with McKesson.

**Section G - Career Goals**

What are your career goals? Consider level of responsibility, kind of work, and income. What skills, experience, or knowledge do you have that qualify you for this position?

I hereby certify that the answers given by me on this application are true and correct without significant omissions of any kind. I agree to submit to a physical examination upon employment. I also authorize the companies or persons identified in this application, with the exceptions noted by me under "Work Experience," to give any information regarding my employment together with any information they may have regarding me whether or not it is on their records. I hereby release said companies from any liability, damage whatsoever for issuing this information. I understand that misrepresentation or omission of facts on this application, form or attached resume can be cause for dismissal.

Date  
SignedSignature of  
Applicant

MKIL40602

Applicants who would be expected to have access to the warehouses or products of McKesson Drug & Health Care Group, McKesson Wine & Spirits Group or Skaggs-Stone, should complete Addendum Number One on this application.

MK095012

MKIL189603

Supplement to  
Application for Employment

This page is to be completed by new employees upon being hired.

|                     |     |      |                      |     |      |                      |     |      |
|---------------------|-----|------|----------------------|-----|------|----------------------|-----|------|
| Job Title           |     |      | Salary \$            |     |      | Salary Grade         |     |      |
| Hired By            |     |      | Department           |     |      |                      |     |      |
| Date of Hire, Month | Day | Year | Starting Date, Month | Day | Year | Date of Birth, Month | Day | Year |

Are you subject to any recurring illness or allergies? If yes, please explain nature and frequency.

List any serious illness, accidents, operations or nervous disorders you have had and approximate dates.

If you have been employed in a position that requires the use of a motor vehicle, please complete this section.

|   |     |    |             |
|---|-----|----|-------------|
| Have you a valid driver's license for this state?                                     | Yes | No | License No. |
| Have you ever had your driver's license suspended or revoked? If yes, please explain. | Yes | No |             |

In case of emergency, who should be notified?  
Name, Last

First

Middle

Address, Street

City

State

Zip Code

Phone No.

Date Signed

Signature of Applicant

All employees are requested to complete Addendum Number Two (Self-Identification), of the Application for Employment indicating their status as a member of a protected class.

Attach Addendum Number One (Per-87), if applicable; Employment Check-List (Per-85); Orientation Check-List (Per-89); Employment Agreement (Per-88), if applicable; and Interview Guide (Per-82), if use.

MKIL40603

MK095013

MKIL189604

# REQUEST FOR CHECK OF DRIVING RECORD

1. In accordance with the provisions of Section 604 and Section 607 of the Fair Credit Reporting Act, Public Law No. 91-508, I hereby certify that the information requested below will be used for a "permissible purpose" as defined in the Act, and that the information received will be used for no other purpose.
2. I further certify that if the applicant named below is denied employment based upon the information received, I will identify the source of the report in accordance with Section 615 (a) of the Fair Credit Reporting Act.

\_\_\_\_\_  
(Signature of Requestor)

\_\_\_\_\_  
(Date)

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CHEM OP 30.70 Exhibit 5  
9/15/85 9/15/85  
Page 1 of 1

GENTLEMEN:

The following named person has made application with our company for the position of \_\_\_\_\_. As in accordance with Section 391.23, Federal Department of Transportation Regulations, please furnish the undersigned with the applicant's driving record for the past three years.

NAME OF APPLICANT \_\_\_\_\_

ADDRESS \_\_\_\_\_  
(Number & Street) (City) (State) (Zip Code)

FORMER ADDRESS \_\_\_\_\_  
(Number & Street) (City) (State) (Zip Code)

RACE \_\_\_\_\_ SEX \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

SOCIAL SECURITY NUMBER \_\_\_\_\_ LICENSE NUMBER \_\_\_\_\_

REQUESTED BY

MKIL40604

\_\_\_\_\_  
(Name of Company) (Typed Name)

\_\_\_\_\_  
(Address) (Title)

\_\_\_\_\_  
(City) (State) (Signature)



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Form No. 16F

MK095014

MKIL189605

# REQUEST FOR INFORMATION From Previous Employer

CHEM OP 30.70 Exhibit 6  
9/15/85 9/15/85

I hereby authorize you to release the following information to

\_\_\_\_\_ for purposes of investigation  
(Prospective Employer)

as required by Section 391.23 of the Federal Motor Carrier Safety Regulations.  
You are released from any and all liability which may result from furnishing  
such information.

\_\_\_\_\_ (Date) \_\_\_\_\_ (Applicant's Signature)

Gentlemen:

The below named individual has made application to this company for a position as \_\_\_\_\_  
\_\_\_\_\_ and states that he was employed by you as \_\_\_\_\_  
\_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_.

We appreciate your time in completing, in confidence, the information requested below. Enclosed is a  
business reply envelope for your convenience. Thank you for your courtesy.

Sincerely,

\_\_\_\_\_  
\_\_\_\_\_

Name of Applicant: \_\_\_\_\_

1. Employed from \_\_\_\_\_ to \_\_\_\_\_ as \_\_\_\_\_ at wage or salary  
of \_\_\_\_\_.
2. Did he drive motor vehicle for you? \_\_\_\_\_, Straight Truck? \_\_\_\_\_, Tractor-Semitrailer?  
\_\_\_\_\_, Bus? \_\_\_\_\_. Other (Specify) \_\_\_\_\_.
3. Was he a safe and efficient driver? \_\_\_\_\_.
4. Reason for leaving your employ: Discharged \_\_\_\_\_; Resignation \_\_\_\_\_; Lay Off \_\_\_\_\_;  
Military Duty \_\_\_\_\_.
5. Was his general conduct satisfactory? \_\_\_\_\_.
6. Please advise history of past driving record if available for past three years \_\_\_\_\_.

MKIL40605

(Over)

MK095015

MKIL189606

## CONFIDENTIAL REPORT OF PERSONAL REFERENCE

Please indicate your opinion by placing a check (✓) in the appropriate column.

| CHARACTERISTICS                                     | EXCELLENT | GOOD | FAIR | POOR |
|---|-----------|------|------|------|
| Disposition, Tact, Ability to get along with others |           |      |      |      |
| Initiative, Resourcefulness                         |           |      |      |      |
| Safety Habits                                       |           |      |      |      |
| Driving Skill                                       |           |      |      |      |
| Attitude  |           |      |      |      |
| Loyalty   |           |      |      |      |

Any known Physical Disabilities or Deformities \_\_\_\_\_

If above is yes, please comment \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Any other remarks \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNATURE \_\_\_\_\_

TITLE \_\_\_\_\_

DATE \_\_\_\_\_

MKIL40606



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Form No. 17F

MK095016

MKIL189607

# RECORD OF ROAD TEST

(Check only those items on which the driver's performance is unsatisfactory. Explain unsatisfactory items under Remarks)

Driver's Name \_\_\_\_\_ Address: \_\_\_\_\_  
License No. \_\_\_\_\_ State \_\_\_\_\_ : Equipment Driven: Truck \_\_\_\_\_ Trailer \_\_\_\_\_  
Checked From \_\_\_\_\_ To \_\_\_\_\_ : Date \_\_\_\_\_

## PART 1 - PRE-TRIP INSPECTION AND EMERGENCY EQUIPMENT

Checks general condition approaching unit \_\_\_\_\_  
Looks for leakage of coolants, fuel, lubricants \_\_\_\_\_  
Checks under hood - oil, water, general condition of engine compartment, steering \_\_\_\_\_  
Checks around unit - tires, lights, trailer hookup, brake and light lines, body, doors, horn, windshield wipers \_\_\_\_\_  
Tests brake action, tractor protection valve, and parking (hand) brake \_\_\_\_\_  
Knows use of jacks, tools, emergency warning devices: tire chains, fire extinguisher, spare fuses and four-way flashers \_\_\_\_\_  
Checks instruments \_\_\_\_\_  
Cleans windshield, windows, mirrors, lights, reflectors \_\_\_\_\_

## PART 2 - PLACING VEHICLE IN MOTION AND USE OF CONTROLS

A. MOTOR  
Starts motor without difficulty \_\_\_\_\_  
Allows proper warm-up \_\_\_\_\_  
Understands gauges on instrument panel \_\_\_\_\_  
Maintains proper engine speed while driving \_\_\_\_\_  
Basic knowledge of motors - gas, diesel \_\_\_\_\_  
Abuse of motor \_\_\_\_\_

B. CLUTCH AND TRANSMISSION  
Starts loaded unit smoothly \_\_\_\_\_  
Uses clutch properly \_\_\_\_\_  
Times gearshifts properly \_\_\_\_\_  
Shifts gears smoothly \_\_\_\_\_  
Uses proper gear sequence \_\_\_\_\_

C. BRAKES  
Understands operating principles of air brakes \_\_\_\_\_  
Knows proper use of tractor protection valve \_\_\_\_\_  
Understands low air warning \_\_\_\_\_  
Tests brakes before starting trip \_\_\_\_\_

D. STEERING  
Fights steering wheel \_\_\_\_\_  
Allows truck to wander \_\_\_\_\_  
Poor driving posture or poor grip on wheel \_\_\_\_\_

## E. LIGHTS

Knows lighting regulations \_\_\_\_\_  
Uses proper headlight beam \_\_\_\_\_  
Dim lights when meeting or following other traffic \_\_\_\_\_  
Adjusts speed to range of headlights \_\_\_\_\_  
Proper use of auxiliary lights \_\_\_\_\_

## PART 3 - COUPLING AND UNCOUPLING

Lines up units \_\_\_\_\_  
Hooks brake and light lines properly \_\_\_\_\_  
Secures trailer against movement \_\_\_\_\_  
Backs under slowly \_\_\_\_\_  
Tests hookup with power \_\_\_\_\_  
Checks hookup visually \_\_\_\_\_  
Handles landing gear properly \_\_\_\_\_  
Proper hook-up of full trailer \_\_\_\_\_  
Secures power unit against movement \_\_\_\_\_

## PART 4 - BACKING AND PARKING

A. BACKING  
Gets out and checks before backing \_\_\_\_\_  
Looks back as well as uses mirror \_\_\_\_\_  
Gets out and rechecks conditions on long back \_\_\_\_\_  
Avoids backing from blind side \_\_\_\_\_  
Signals when backing \_\_\_\_\_  
Controls speed and direction properly while backing \_\_\_\_\_

B. PARKING (City)  
Takes too many pull-ups \_\_\_\_\_  
Hits nearby vehicles or stationary objects \_\_\_\_\_  
Hits curb \_\_\_\_\_  
Parks too far from curb \_\_\_\_\_  
Fails to secure unit - set parking brake, put in gear, block wheels, shut off motor \_\_\_\_\_  
Fails to check traffic conditions and signal when pulling out from parked position \_\_\_\_\_  
Parks in illegal or unsafe location \_\_\_\_\_

C. PARKING (Road)  
Parks off pavement \_\_\_\_\_  
Avoids parking on soft shoulder \_\_\_\_\_  
Uses emergency warning signals when required \_\_\_\_\_  
Secures unit properly \_\_\_\_\_

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## PART 5 - SLOWING AND STOPPING

Uses gears properly ascending \_\_\_\_\_  
 Gears down properly descending \_\_\_\_\_  
 Stops and restarts without rolling back \_\_\_\_\_  
 Tests brakes at top of hills \_\_\_\_\_  
 Uses brakes properly on grades \_\_\_\_\_  
 Uses mirrors to check traffic to rear \_\_\_\_\_  
 Signals following traffic \_\_\_\_\_  
 Avoids sudden stops \_\_\_\_\_  
 Stops smoothly without excessive fanning \_\_\_\_\_  
 Stops before crossing sidewalk when coming out of driveway or alley \_\_\_\_\_  
 Stops clear of pedestrian crosswalks \_\_\_\_\_

## PART 6 - OPERATING IN TRAFFIC PASSING AND TURNING

### A. TURNING

Gets in proper lane well in advance \_\_\_\_\_  
 Signals well in advance \_\_\_\_\_  
 Checks traffic conditions and turns only when way is clear \_\_\_\_\_  
 Does not swing wide or cut short while turning \_\_\_\_\_

### B. TRAFFIC SIGNS AND SIGNALS

Does not approach signal prepared to stop if necessary \_\_\_\_\_  
 Violates traffic signal \_\_\_\_\_  
 Runs yellow light \_\_\_\_\_  
 Starts up too fast or too slow on green \_\_\_\_\_  
 Fails to notice or heed traffic signs \_\_\_\_\_  
 Runs "Stop" signs \_\_\_\_\_

### C. INTERSECTIONS

Adjusts speed to permit stopping if necessary \_\_\_\_\_  
 Checks for cross traffic regardless of traffic controls \_\_\_\_\_  
 Yields right-of-way for safety \_\_\_\_\_

### D. GRADE CROSSINGS

Adjusts speed to conditions \_\_\_\_\_  
 Makes safe stop, if required \_\_\_\_\_  
 Selects proper gear \_\_\_\_\_

### E. PASSING

Passes with insufficient clear space ahead \_\_\_\_\_  
 Passes in unsafe location: hill, curve, intersection \_\_\_\_\_  
 Fails to signal change of lanes \_\_\_\_\_  
 Fails to warn driver being passed \_\_\_\_\_  
 Pulls out and back - uncertain \_\_\_\_\_  
 Tailgates waiting chance to pass \_\_\_\_\_  
 Blocks traffic with slow pass \_\_\_\_\_  
 Cuts in too short returning to right lane \_\_\_\_\_

### F. SPEED

Speed consistent with basic ability \_\_\_\_\_  
 Adjusts speed properly to road, weather, traffic conditions, legal limits \_\_\_\_\_

Slows down for rough roads \_\_\_\_\_  
 Slows down in advance of curves, intersections, etc. \_\_\_\_\_  
 Maintains consistent speed \_\_\_\_\_

## G. COURTESY AND SAFETY

Depends on others for safety \_\_\_\_\_  
 Yields right-of-way for safety \_\_\_\_\_  
 Fails to go ahead when given right-of-way by others \_\_\_\_\_  
 Tends to crowd other drivers or force way through traffic \_\_\_\_\_  
 Fails to allow faster traffic to pass \_\_\_\_\_  
 Fails to keep right and in own lane \_\_\_\_\_  
 Unnecessary use of horn \_\_\_\_\_  
 Other discourtesy or improper conduct \_\_\_\_\_

## PART 7 - MISCELLANEOUS

### A. GENERAL DRIVING ABILITY AND HABITS

Consistently alert and attentive \_\_\_\_\_  
 Consistently aware of changing traffic conditions \_\_\_\_\_  
 Adjusts driving to meet changing conditions \_\_\_\_\_  
 Performs routine functions without taking eyes from road \_\_\_\_\_  
 Checks instruments regularly while driving \_\_\_\_\_  
 Willing to take instructions and suggestions \_\_\_\_\_  
 Adequate self-confidence in driving \_\_\_\_\_  
 Nervous, apprehensive \_\_\_\_\_  
 Easily angered \_\_\_\_\_  
 Complains too much \_\_\_\_\_  
 Personal appearance, manner, cleanliness \_\_\_\_\_  
 Physical stamina \_\_\_\_\_

### B. HANDLING OF FREIGHT

Checks freight properly \_\_\_\_\_  
 Handles and loads freight properly \_\_\_\_\_  
 Handles bills properly \_\_\_\_\_  
 Breaks down load as required \_\_\_\_\_

### C. RULES AND REGULATIONS

Knowledge of company rules \_\_\_\_\_  
 Knowledge of regulations: federal, state, local \_\_\_\_\_  
 Knowledge of special truck routes \_\_\_\_\_

### D. USE OF SPECIAL EQUIPMENT (Specify)

## REMARKS:

GENERAL PERFORMANCE: Satisfactory \_\_\_\_\_; Needs Training \_\_\_\_\_; Unsatisfactory \_\_\_\_\_

QUALIFIED FOR: Truck \_\_\_\_\_; Tractor-Semitrailer \_\_\_\_\_; Other \_\_\_\_\_ (Specify)

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Signature of Examiner

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FORM NO. 13F

MK095010

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# CERTIFICATION OF WRITTEN EXAMINATION

CHEM OP 30.70 Exhibit 3

9/15/85

9/15/85

Page 1 of 1

**Instructions to Carrier:** If the examinee successfully completes the examination, the person who administered it shall advise him of the correct answers to any questions he failed to answer correctly and shall complete the certification of written examination in duplicate. The original of this certificate shall be retained by the motor carrier in the driver qualification file of the person who was examined with a list of the questions asked on the examination and the person's answers to those questions. Section 391.35 (d)(e)(1)(2)(3)

This is to certify that the person whose signature appears below has completed the written examination under my supervision in accordance with provisions of 391.35 of the Federal Motor Carrier Safety Regulations.

Signature of person taking examination

Date of examination

Location of examination

Signature of examiner

Title of examiner

Organization and address of examiner

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Book No. 88

## CERTIFICATION OF ROAD TEST

**Instructions to Carrier:** If the road test is successfully completed, the person who gave it must complete the following certification in duplicate. The original of the signed road test form and the original of the Certification of Road Test shall be retained in the driver qualification file of the person who was examined, and duplicate copies provided to the person examined. Section 391.31 (e)(f)(g)(1)(2) of the Federal Motor Carrier Safety Regulations.

Driver's name \_\_\_\_\_ Social Security No. \_\_\_\_\_

Operator's or Chauffeur's License No. \_\_\_\_\_ State \_\_\_\_\_

Type of Power Unit \_\_\_\_\_ Type of Trailer(s) \_\_\_\_\_

This is to certify that the above-named driver was given a road test under my supervision on \_\_\_\_\_ 19 \_\_\_\_\_ consisting of approximately \_\_\_\_\_ miles of driving.

It is my considered opinion that this driver possesses sufficient driving skill to operate safely the type of commercial motor vehicle listed above.

Signature of examiner

Title

Organization and address of examiner

MKIL40609

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Book No. 88

MK095019

MKIL189610

# BUREAU OF MOTOR CARRIER SAFETY

## WRITTEN EXAMINATION FOR DRIVERS

Applicant \_\_\_\_\_

Date \_\_\_\_\_

Examiner \_\_\_\_\_

CHEM OP 30.70 Exhibit 9  
9/15/85 9/15/85

1. 390.32 A motor carrier who is also a driver (owner-operator):

1. ( ) is not covered by the safety regulations.
2. ( ) must obey only those parts of the regulations which cover drivers.
3. ( ) must obey only those parts of the regulations which cover motor carriers.
4. ( ) must obey both the parts covering drivers and the parts covering motor carriers.

2. 391.11(b)(1) With only a few exceptions, the Federal Motor Carrier Safety Regulations say a driver must be:

1. ( ) at least 18 years old.
2. ( ) at least 19 years old.
3. ( ) at least 20 years old.
4. ( ) at least 21 years old.

3. 391.15(c)(2)(3) A driver cannot drive a motor vehicle:

1. ( ) For one year after a first offense conviction for a felony involving a commercial motor vehicle he was driving.
2. ( ) For one year after a first offense conviction for driving a commercial vehicle under the influence of alcohol or narcotics.
3. ( ) For one year after a first offense conviction for leaving the scene of an accident which resulted in personal injury or death.
4. ( ) For one year after a first offense conviction for any of the above.

4. 391.21(b)(7)(8)(10) Every driver applicant must fill out an application form giving:

1. ( ) a list of all vehicle accidents he was in during the previous 3 years.
2. ( ) a list of all of his motor vehicle violation convictions and bond forfeits (except for parking) during the previous 3 years.
3. ( ) a list of names and addresses of all of his employers during the previous 3 years.
4. ( ) all of the above.

5. 391.27(a)(b) At least once a year, a driver must fill out a form listing all motor vehicle violations (except parking) which he had during the previous 12 months. He must fill out the form:

1. ( ) even if he had no violations.
2. ( ) only if he was convicted.
3. ( ) only if he was convicted or forfeited bond or collateral.
4. ( ) only if the carrier requires it.

6. 391.33(a)(2) If a driver applicant has a valid certificate showing he passed a driver's road test:

1. ( ) the carrier must accept it.
2. ( ) the carrier may still require the applicant to take a road test.
3. ( ) the carrier cannot accept it.
4. ( ) the carrier may request a road test waiver from the Bureau of Motor Carrier Safety.

7. 391.41(b)(5) Persons with breathing problems which may affect safe driving:

1. ( ) cannot drive.
2. ( ) cannot drive unless the vehicle has an emergency oxygen supply.
3. ( ) cannot drive unless another driver is along.
4. ( ) cannot drive except on short runs.

8. 391.41(b)(7) Persons with arthritis, rheumatism, or any such condition which may affect safe driving:

1. ( ) cannot drive unless they are checked by a doctor before each trip.
2. ( ) cannot drive.
3. ( ) cannot drive except when they are free of pain.
4. ( ) cannot drive unless another driver is along.

9. 391.41(b)(8) Persons who have ever had epilepsy:

1. ( ) cannot drive unless another driver is along.
2. ( ) cannot drive.
3. ( ) cannot drive on long runs.
4. ( ) cannot drive without monthly medical examinations.

10. 391.41(b)(9)(12)(13) In order to be able to drive, a person:

1. ( ) must not have any mental, nervous or physical problem likely to affect safe driving.
2. ( ) must not use an amphetamine, narcotic or any habit-forming drug.
3. ( ) must not have a current alcoholism problem.
4. ( ) must not have or use any of the above.

11. 391.45(c) Any driver who gets an injury or illness serious enough to affect his ability to perform his duties:

1. ( ) must report it at his next scheduled physical.
2. ( ) cannot drive again.
3. ( ) must take another physical and be recertified before driving again.
4. ( ) must wait at least 1 month after recovery before driving again.

12. 392.2 A driver may not drive faster than posted speed limits:

1. ( ) unless he is sick and must complete his run quickly.
2. ( ) at any time.
3. ( ) unless he is passing another vehicle.
4. ( ) unless he is late and must make a scheduled arrival.

13. 392.3 When a driver's physical condition while on a trip requires that he stop driving, but stopping would not be safe, the driver:

1. ( ) must stop anyway.
2. ( ) may try to complete his trip, but as quickly as possible.
3. ( ) may continue to drive to his home terminal.
4. ( ) may continue to drive, but must stop at the nearest safe place.

14. 392.5(a)(1) A driver may not drink or be under the influence of any alcoholic beverage (regardless of alcoholic content):

1. ( ) within 4 hours before going on duty or driving.
2. ( ) within 6 hours before going on duty or driving.
3. ( ) within 8 hours before going on duty or driving.
4. ( ) within 12 hours before going on duty or driving.

15. 392.7 A driver must satisfy himself that service and parking brakes, tires, lights and reflectors, mirrors, coupling and other devices are in good working order:

1. ( ) at the end of each trip.
2. ( ) before the vehicle may be driven.
3. ( ) only when he considers it necessary.
4. ( ) according to schedules set by the carrier.



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16. 392.8 Which of the following must be in place and ready for use before a vehicle can be driven?

1. ( ) at least one spare fuse or other overload protector of each type used on the vehicle.
2. ( ) a tool kit containing a specified list of hand tools.
3. ( ) at least one spare tire for every four wheels.
4. ( ) a set of spark plugs.

17. 392.9(a)(3) If any part of the cargo or anything else blocks a driver's front or side views, his arm or leg movements, or his access to emergency equipment, the driver:

1. ( ) can drive the vehicle, but must report the problems at the end of the trip.
2. ( ) cannot drive the vehicle.
3. ( ) can drive the vehicle, but only at speeds under 40 miles per hour.
4. ( ) can drive the vehicle, but only on secondary roads.

18. 392.9(a) Any driver who needs glasses to meet the minimum visual requirements:

1. ( ) must drive only during daylight hours.
2. ( ) must always wear his glasses when driving.
3. ( ) must always carry a spare pair of glasses.
4. ( ) must not drive a motor vehicle.

19. 392.9(b) A driver may drive with a hearing aid:

1. ( ) if he always has it turned on while he is driving.
2. ( ) if he always carries a spare power source for it.
3. ( ) if he can meet the hearing requirements when he has it turned on.
4. ( ) if all of the above requirements are met.

20. 392.10(a) A driver required to stop at a railroad crossing should bring his vehicle to a stop no closer to the tracks than:

1. ( ) 5 feet.
2. ( ) 10 feet.
3. ( ) 15 feet.
4. ( ) 20 feet.

21. 392.10(a) Shifting gears is not permitted:

1. ( ) when traveling faster than 35 miles per hour.
2. ( ) when moving across any bridge.
3. ( ) when crossing railroad tracks.
4. ( ) when traveling down a hill steeper than 10 degrees.

22. 392.13 Drivers of motor vehicles not required to stop at drawbridges without signals:

1. ( ) must drive at a rate of speed which will permit a stop before reaching the lip of the draw.
2. ( ) must sound their horn before crossing.
3. ( ) can proceed across without reducing speed.
4. ( ) must slow down only if directed to by an attendant.

23. 392.15(a) A driver turning his vehicle should begin flashing his turn signal:

1. ( ) at least 50 feet before turning.
2. ( ) at least 60 feet before turning.
3. ( ) at least 75 feet before turning.
4. ( ) at least 100 feet before turning.

24. 392.16 Which of the following is true?

1. ( ) if a seat belt is installed in the vehicle, a driver must have it fastened before beginning to drive.
2. ( ) a driver may or may not use the seat belt, depending on his judgment.
3. ( ) seat belts are not necessary on heavier vehicles.
4. ( ) a driver must use his seat belt only if required to by the carrier.

25. 392.21 When a motor vehicle cannot be stopped off the traveled part of the highway, the driver:

1. ( ) must keep driving.
2. ( ) may stop, but shall get as far off the traveled part of the highway as possible.
3. ( ) may stop, but shall make sure that the vehicle can be seen as far as possible to its front and rear.
4. ( ) may stop if he has to, but should do both 2 and 3 above.

26. 392.22(b)(1) If a vehicle has a breakdown the driver must place one emergency signal:

1. ( ) 100 feet in front of the vehicle in the center of the lane it occupies.
2. ( ) 100 feet in back of the vehicle in the center of the lane it occupies.
3. ( ) 10 feet in front or back of the traffic side.
4. ( ) at all of the above locations.

27. 392.22(b)(1)(i) If a vehicle has a breakdown on a poorly-lit street or highway, the driver shall place on the traffic side:

1. ( ) a reflective triangle.
2. ( ) a lighted red electric lantern.
3. ( ) a red reflector.
4. ( ) any one of the above.

28. 392.22(b)(2)(iii) No emergency signals are required for a vehicle with a breakdown if the street or highway lighting is bright enough so it can be seen at a distance of:

1. ( ) 100 feet.
2. ( ) 200 feet.
3. ( ) 500 feet.
4. ( ) 750 feet.

29. 392.22(b)(2)(v) If a vehicle has a breakdown and stops on a poorly-lit divided or one way highway, the driver must place one emergency signal:

1. ( ) 200 feet in back of the vehicle in the center of the lane it occupies.
2. ( ) 100 feet in back of the vehicle on the traffic side of the vehicle.
3. ( ) 10 feet in back of the vehicle on the traffic side of the vehicle.
4. ( ) at all of the above locations.

30. 392.25 Lighted flame-producing emergency signals, including fuses:

1. ( ) may not be used with vehicles carrying Class A or B explosives
2. ( ) may not be used with tank vehicles, loaded or empty, which are used to carry flammable liquids or gas.
3. ( ) may not be used with any vehicle using compressed gas as a fuel.
4. ( ) may not be used with any of the above.

31. 392.30(a) A driver is required to have his lights on:

1. ( ) from one-half hour before sunset to one-half hour before sunrise.
2. ( ) from one-half hour before sunset to sunrise.
3. ( ) from one-half hour after sunset to one-half hour before sunrise.
4. ( ) from sunset to one-half hour before sunrise.

32. 392.32(a)(b) When lights are required on the open highway, a driver shall use the high beam:

1. ( ) except when within 500 feet of an on-coming vehicle or a vehicle he is following.
2. ( ) except when within 400 feet of an on-coming vehicle or a vehicle he is following.
3. ( ) except when within 200 feet of an on-coming vehicle or a vehicle he is following.
4. ( ) except when within 100 feet of an on-coming vehicle or a vehicle he is following.

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33. 392.32(a) When lights are required, drivers may use lower beam lights:

1. ( ) when fog, dust or other such conditions exist.
2. ( ) when approaching tunnels or bridges.
3. ( ) when driving on one way highways.
4. ( ) when within 1,000 feet of business areas or where people live.

34. 392.40 Every driver involved in an accident must follow the Safety Regulation procedures whenever an injury or death is involved or if:

1. ( ) the accident is caused by the driver and property damage of over \$250.00 results.
2. ( ) property damage of over \$250.00 results, no matter who is at fault.
3. ( ) property damage of over \$100.00 results.
4. ( ) property damage of any kind results.

35. 392.41 If a driver strikes a parked vehicle, he should first:

1. ( ) stop and call the local police.
2. ( ) stop and call his carrier.
3. ( ) stop and try to find the driver or owner of the parked vehicle.
4. ( ) stop and estimate the damage.

36. 392.42 When a driver receives notice that his operator's license or permit has been revoked, suspended, or withdrawn, he must:

1. ( ) notify his carrier within 72 hours.
2. ( ) notify his carrier within one week.
3. ( ) notify his carrier before the end of the next business day.
4. ( ) take no action since his carrier will also get a notice.

37. 392.61 Except in emergencies, no driver shall allow his vehicle to be driven by any other person:

1. ( ) except those he knows can drive it.
2. ( ) except on roads with little or no traffic.
3. ( ) except those allowed by the carrier to do it.
4. ( ) unless he goes along with the person driving.

38. 392.64 A person may ride inside a vehicle's closed body or trailer:

1. ( ) only on short runs.
2. ( ) only if there is an easy way to get out from the inside.
3. ( ) only if the inside of the body or trailer is lighted.
4. ( ) only if there is no cargo in it.

39. 392.66 If carbon-monoxide is inside a vehicle or if a mechanical problem may produce a carbon-monoxide danger, the vehicle:

1. ( ) may be sent out and driven so long as the windows are left open.
2. ( ) may not be sent out or driven.
3. ( ) may be sent out and driven only if the carrier decides the vehicle has to be used.
4. ( ) may be sent out and driven on short runs.

40. 392.68 No motor vehicle shall be operated out of gear:

1. ( ) except when fuel must be saved.
2. ( ) except on hills which are less than 20 degrees.
3. ( ) except when it is necessary for stopping or shifting gears.
4. ( ) except when the vehicle's speed is under 25 miles per hour.

41. 393.1(a) Under the Federal Motor Carrier Safety Regulations, no vehicle may be driven:

1. ( ) until a list of all missing or defective equipment has been prepared and given to the carrier.
2. ( ) until all equipment has been inspected and replacements for defective parts have been ordered.
3. ( ) unless all missing equipment is to be replaced no later than the end of the vehicle's next run.
4. ( ) until it meets all of the equipment requirements of the Regulations.

42. 393 various Minimum requirements for lighting, reflecting and electrical equipment and devices on buses and trucks:

1. ( ) are set by the vehicle makers.
2. ( ) are set by the National Safety Council.
3. ( ) are specified in the Safety Regulations.
4. ( ) are set by the trucking associations.

43. 393.18(a)(b) Every motor vehicle which has a load sticking out over its sides must be specifically marked with flags and lamps. Additional flags and lamps must be added if the load or tailgate sticks out beyond the rear of the vehicle by more than:

1. ( ) 2 feet.
2. ( ) 4 feet.
3. ( ) 6 feet.
4. ( ) 8 feet.

44. 393.41(a) Every vehicle shall have a parking brake system which will hold it, no matter what its load:

1. ( ) on any grade on which it is operated which is free from ice and snow.
2. ( ) on all grades under 15 degrees which are free from ice and snow.
3. ( ) on all grades under 20 degrees which are free from ice and snow.
4. ( ) on all grades under 25 degrees which are free from ice and snow.

45. 393.77(b)(6) A portable heater may not be used in any vehicle cab:

1. ( ) unless it is secured.
2. ( ) unless it is of the electric filament type.
3. ( ) at any time.
4. ( ) without approval from the carrier.

46. 395.3(a) Drivers are not generally allowed to drive for more than:

1. ( ) 6 hours following 8 straight hours off duty.
2. ( ) 8 hours following 8 straight hours off duty.
3. ( ) 10 hours following 8 straight hours off duty.
4. ( ) 12 hours following 8 straight hours off duty.

47. 395.3(a) Most drivers of large vehicles are not allowed to drive:

1. ( ) after they have been on duty for 16 hours.
2. ( ) after they have been on duty for 15 hours.
3. ( ) after they have been on duty for 14 hours.
4. ( ) after they have been on duty for 12 hours.

48. 395.3(b) Generally, a driver may not be "on duty":

1. ( ) for more than 40 hours in any 7 straight days.
2. ( ) for more than 50 hours in any 7 straight days.
3. ( ) for more than 60 hours in any 7 straight days.
4. ( ) for more than 70 hours in any 7 straight days.

49. 395.7 When a driver is riding in a vehicle, but is not driving and has no other responsibility, such time shall be counted as:

1. ( ) on-duty time.
2. ( ) on-duty time unless he is allowed 8 straight hours off duty when he gets to the destination.
3. ( ) on-duty time unless he is allowed 6 straight hours off duty when he gets to the destination.
4. ( ) on-duty time unless he is allowed 4 straight hours off duty when he gets to the destination.

50. 395.8(b) Every driver must prepare an original and one copy of a daily log which he must keep current by updating it:

1. ( ) every time he changes a duty status.
2. ( ) every 24 hours.
3. ( ) every 8 hours.
4. ( ) at the end of each trip.

51. 395.8(c) Except for the name and main address of the carrier, all entries in a log:

1. ( ) must be printed in ink or typed.
2. ( ) must be made by the carrier dispatcher.
3. ( ) must be made in front of a witness.
4. ( ) must be written in the driver's own handwriting.

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52. 395.8(1)(p)(q) Which of the following is not to be put in a driver's log?

1. ☐ Time spent in a sleeper berth.
2. ☐ Total hours in each duty status.
3. ☐ The name of the carrier or carriers.
4. ☐ The name and make of his vehicle.

53. 395.11 If an emergency delays a run which could normally have been completed within hours of service limits, the driver:

1. ☐ must still stop driving when the hours of service limit is reached.
2. ☐ may drive for 1 extra hour.
3. ☐ may drive for 2 extra hours.
4. ☐ may finish his run without being in violation.

54. 395.13 Any driver declared "Out of Service":

1. ☐ must take a road test before driving again.
2. ☐ must wait 72 hours before driving again.
3. ☐ must appeal to the Director of the Bureau of Motor Carrier Safety to drive again.
4. ☐ can drive again only after hours of service requirement are met.

55. 396.4 If a vehicle on a trip is in a condition likely to cause an accident or breakdown:

1. ☐ the driver should report it at the end of his run so repairs can be made.
2. ☐ the driver should drive at lower speeds for the rest of the run.
3. ☐ the driver should stop immediately unless going on to the nearest repair shop is safer than stopping.
4. ☐ the driver should change his route so as to get away from heavily traveled roads.

56. 396.5(c) If authorized Federal inspectors find a vehicle which is likely to cause an accident or breakdown:

1. ☐ it will be reported to the carrier for repair as soon as the vehicle is not scheduled.
2. ☐ it will be reported to the carrier for repair at the end of the trip.
3. ☐ it will be marked with an "Out of Service Vehicle" sticker and not driven until repairs are made.
4. ☐ the driver will be held responsible and declared "Out of Service."

57. 396.5(c)(4) If the driver makes his own repairs on an "Out of Service" vehicle:

1. ☐ his work must be approved by a mechanic.
2. ☐ he must complete and sign a "Certification of Repairman" form himself.
3. ☐ his work must be approved by his supervisor.
4. ☐ his work must be approved by a Federal inspector.

**The following questions must be answered by Drivers involved in the transportation of Hazardous Materials.**

58. 397.3 Department of Transportation Regulations covering the driving and parking of vehicles containing hazardous materials:

1. ☐ replace State and local laws.
2. ☐ prevent States and cities from having their own laws.
3. ☐ must be obeyed even if State or local laws are less strict or disagree.
4. ☐ should not be obeyed if State or local laws disagree.

59. 397.5(c) A vehicle which contains hazardous materials other than Class A or B explosives must be attended at all times:

1. ☐ by the driver.
2. ☐ by the driver except when he is involved in something else necessary to his duties as a driver.
3. ☐ by the driver or a person chosen by the driver.
4. ☐ by the driver or a police officer.

60. 397.5(d)(1) A vehicle containing Class A or B explosives or other hazardous materials on a trip is "attended":

1. ☐ when the person in charge is anywhere within 100 feet of it.
2. ☐ as long as the driver can see it from 200 feet away.
3. ☐ when the person in charge is within 100 feet and has a clear view of it.
4. ☐ when the person in charge is resting in the berth.

61. 397.7(a)(3) Except for short periods when operations make it necessary, trucks carrying Class A or B explosives cannot be parked any closer to bridges, tunnels, building or crowds of people than:

1. ☐ 50 feet.
2. ☐ 100 feet.
3. ☐ 200 feet.
4. ☐ 300 feet.

62. 397.13(a) Smoking or carrying a lighted cigarette, cigar or pipe near a vehicle which contains explosives, oxidizing or flammable materials is not allowed:

1. ☐ except in the closed cab of the vehicle.
2. ☐ except when the vehicle is moving.
3. ☐ except at a distance of 25 feet or more from the vehicle.
4. ☐ except when approved by the carrier.

63. 397.15(a)(b) When a vehicle containing hazardous materials is being fueled:

1. ☐ no person may remain in the cab.
2. ☐ a person must be in control of the fueling process at the point where the fuel tank is filled.
3. ☐ the area within 50 feet of the vehicle must be cleared.
4. ☐ the person who controls the fueling process must wear special clothes.

64. 397.17(a) If a vehicle carrying hazardous materials is equipped with dual tires on any axle, the driver must examine the tires:

1. ☐ at all fueling stops only.
2. ☐ only at the end of each day or tour of duty.
3. ☐ at the beginning of each trip and each time the vehicle is parked.
4. ☐ at the beginning of each trip only.

65. 397.17(c) If a driver of a vehicle carrying hazardous materials finds a tire which is overheated, he must:

1. ☐ wait for the overheated tire to cool before going on.
2. ☐ remove and replace the overheated tire, store it on the vehicle and drive on.
3. ☐ remove the tire, place it a safe distance from the vehicle and not drive the vehicle until the cause of the overheating is fixed.
4. ☐ drive slowly to the nearest repair shop and have the cause of the overheating fixed.

66. 177.823(a)(3) When required, specified hazardous materials markings or signs must be placed:

1. ☐ wherever they can be seen clearly.
2. ☐ on the sides and rear of the vehicle.
3. ☐ on the front, rear and sides of the vehicle.
4. ☐ on the front and rear bumpers of the vehicle.

## SCORING KEY WRITTEN EXAMINATION

| Section:                        | Answer: | Section:                  | Answer: |
|---------------------------------|---------|---------------------------|---------|
| (1) 390.32 .....                | 4       | (34) 392.40 .....         | 4       |
| (2) 391.11(b)(1) .....          | 4       | (35) 392.41 .....         | 3       |
| (3) 391.15(c)(2)(3) .....       | 4       | (36) 392.42 .....         | 3       |
| (4) 391.21(b)(7)(8)(10) .....   | 4       | (37) 392.61 .....         | 3       |
| (5) 391.27(a)(b) .....          | 1       | (38) 392.64 .....         | 2       |
| (6) 391.33(2) .....             | 2       | (39) 392.66 .....         | 2       |
| (7) 391.41(b)(5) .....          | 1       | (40) 392.68 .....         | 3       |
| (8) 391.41(b)(7) .....          | 2       | (41) 393.1(a) .....       | 4       |
| (9) 391.41(b)(8) .....          | 2       | (42) 393 various .....    | 3       |
| (10) 391.41(b)(9)(12)(13) ..... | 4       | (43) 393.18(a)(b) .....   | 2       |
| (11) 391.45(c) .....            | 3       | (44) 393.41(a) .....      | 1       |
| (12) 392.2 .....                | 2       | (45) 393.77(b)(6) .....   | 3       |
| (13) 392.3 .....                | 4       | (46) 395.3(a) .....       | 3       |
| (14) 392.5(a)(1) .....          | 1       | (47) 395.3(a) .....       | 2       |
| (15) 392.7 .....                | 2       | (48) 395.3(b) .....       | 3       |
| (16) 392.8 .....                | 1       | (49) 395.7 .....          | 2       |
| (17) 392.9(a)(3) .....          | 2       | (50) 395.8(b) .....       | 1       |
| (18) 392.9(a) .....             | 2       | (51) 395.8(c) .....       | 4       |
| (19) 392.9(b) .....             | 4       | (52) 395.8(1)(p)(q) ..... | 4       |
| (20) 392.10(a) .....            | 3       | (53) 395.11 .....         | 4       |
| (21) 392.10(a) .....            | 3       | (54) 395.13 .....         | 4       |
| (22) 392.13 .....               | 1       | (55) 396.4 .....          | 3       |
| (23) 392.15(a) .....            | 4       | (56) 396.5(c) .....       | 3       |
| (24) 392.16 .....               | 1       | (57) 396.5(c)(4) .....    | 2       |
| (25) 392.21 .....               | 4       | (58) 397.3 .....          | 3       |
| (26) 392.22(b)(1) .....         | 4       | (59) 397.5(c) .....       | 2       |
| (27) 392.22(b)(1)(i) .....      | 4       | (60) 397.5(d)(1) .....    | 3       |
| (28) 392.22(b)(2)(iii) .....    | 3       | (61) 397.7(a)(3) .....    | 4       |
| (29) 392.22(b)(2)(v) .....      | 4       | (62) 397.13(a) .....      | 3       |
| (30) 392.25 .....               | 4       | (63) 397.15(a)(b) .....   | 2       |
| (31) 392.30 .....               | 3       | (64) 397.17(a) .....      | 3       |
| (32) 392.32 a)(b) .....         | 1       | (65) 397.17(c) .....      | 3       |
| (33) 392.32(a) .....            | 1       | (66) 177.823(a)(3) .....  | 3       |



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Form No. 14F-a  
(1 per 100 Form No. 14F)

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MKIL189615

**DRIVER DATA SHEET**  
**For Casuals, New Hires & Temporary Employees**

CHEM OP 30.70 Exhibit 11  
9/15/85 9/15/85  
Page 1 of 1

Name (Print) \_\_\_\_\_

Social Security Number \_\_\_\_\_

Motor Vehicle Operator's License Number \_\_\_\_\_

Type of License \_\_\_\_\_ Issuing State \_\_\_\_\_

Instructions: Motor carriers when using a driver for the first time or intermittently shall obtain from the driver a signed statement giving the total time on duty during the immediately preceding 7 days and time at which such driver was last relieved from duty prior to beginning work for such carrier. Rule 395.8(r) Federal Motor Carrier Safety Regulations.

| DAY          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | TOTAL |
|--------------|---|---|---|---|---|---|---|-------|
| DATE         |   |   |   |   |   |   |   |       |
| HOURS WORKED |   |   |   |   |   |   |   |       |

I hereby certify that the information given above is correct to the best of my knowledge and belief, and that I was last relieved from work at \_\_\_\_\_ on \_\_\_\_\_  
Time (Day) (Month) (Year)

(Signature) \_\_\_\_\_

Witness: \_\_\_\_\_ DATE \_\_\_\_\_  
Company Representative

**EMPLOYMENT CHECK LIST FOR INTERMITTENT, CASUAL OR OCCASIONAL DRIVER**

The qualification file for an intermittent, casual, or occasional driver employed under the rules in Sec. 391.63 must include the following forms as per Section 391.51(d) Federal Motor Carrier Safety Regulations.

1. **Medical Examiner's Certificate**—The medical examiner's certificate of his physical qualification to drive a motor vehicle or a legible photographic copy of the certificate.

Published by: JJ Keller & Associates, Inc. — Neenah, Wisconsin Book No. 2B

2. **Certificate of Driver's Road Test**—The certificate of driver's road test issued to the driver pursuant to Sec. 391.31(e), or a copy of the license or certificate which the motor carrier accepted as equivalent to the driver's road test pursuant to Sec. 391.31.

Published by: JJ Keller & Associates, Inc. — Neenah, Wisconsin Form No. 11F

3. **Certificate of Written Examination, Questions and Answers**—The questions asked, the answers the driver gave, and the certificate of written examination issued to him pursuant to Sec. 391.35, or a copy of a certificate which the motor carrier accepted as equivalent to a written examination pursuant to Sec. 391.37.

Published by: JJ Keller & Associates, Inc. — Neenah, Wisconsin Form No. 11F



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614-722-2848  
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**MKIL40615**

Form No. 10F

MK095025

MKIL189616

### CERTIFICATION OF ROAD TEST

Driver's Name \_\_\_\_\_  
Social Security No. \_\_\_\_\_  
Operator's or Chauffeur's License No. \_\_\_\_\_  
State \_\_\_\_\_  
Type of Power Unit \_\_\_\_\_  
Type of Trailer(s) \_\_\_\_\_  
If Passenger Carrier, Type of Bus \_\_\_\_\_  
This is to certify that the above-named driver was given a road test under my supervision on \_\_\_\_\_ 19\_\_\_\_ consisting of approximately \_\_\_\_\_ miles of driving. It is my considered opinion that this driver possesses sufficient driving skill to operate safely the type of commercial motor vehicle listed above.  
Signature of examiner \_\_\_\_\_ Title \_\_\_\_\_  
Organization and address of examiner \_\_\_\_\_  
I, \_\_\_\_\_, Secretary of Transportation, certify that this is a true and correct copy of the original.

Card No. 6B-c (RT)

### CERTIFICATE OF WRITTEN EXAMINATION

This is to certify that the person whose signature appears below has completed the written examination under the supervision of the undersigned with a score of 39/35 of the Federal Motor Carrier Safety Regulations.  
Signature of person taking examination \_\_\_\_\_ Date of examination \_\_\_\_\_  
Location of examination \_\_\_\_\_  
Signature of examiner \_\_\_\_\_ Title of examiner \_\_\_\_\_  
Organization and address of examiner \_\_\_\_\_  
I, \_\_\_\_\_, Secretary of Transportation, certify that this is a true and correct copy of the original.

Card No. 6B-c (WE)

### MOTOR CARRIER

MEDICAL EXAMINER'S CERTIFICATE  
I certify that I have examined \_\_\_\_\_  
DRIVER'S NAME - (Print)  
in accordance with the Federal Motor Carrier Safety Regulations (49 CFR 391.41-391.49) and with knowledge of his duties. I find him qualified under the regulations.  
☐ Qualified only when wearing corrective lenses  
☐ Qualified only when wearing hearing aid  
A complete examination form for this person is on file in my office at \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
DATE OF EXAMINATION \_\_\_\_\_ NAME OF EXAMINING DOCTOR - (Print)  
SIGNATURE OF EXAMINING DOCTOR \_\_\_\_\_  
SIGNATURE OF DRIVER \_\_\_\_\_  
ADDRESS OF DRIVER \_\_\_\_\_  
I, \_\_\_\_\_, Secretary of Transportation, certify that this is a true and correct copy of the original.

Card No. 2B-c

### DRIVER QUALIFICATION & IDENTIFICATION CERTIFICATE

NAME OF DRIVER \_\_\_\_\_ SS NO \_\_\_\_\_  
SIGNATURE OF DRIVER \_\_\_\_\_  
I certify that the above named driver, as defined in Sec 391.3(c) is regularly driving a vehicle operated by the below named carrier and is fully qualified under Part 391, Federal Motor Carrier Safety Regulations. His current medical examiner's certificate expires on \_\_\_\_\_ DATE  
This certificate expires: \_\_\_\_\_  
DATE NOT LATER THAN EXPIRATION DATE OF MED EXAM CERTIFICATE  
Issued by \_\_\_\_\_ Issued on \_\_\_\_\_ DATE  
NAME OF CARRIER \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
SIGNATURE \_\_\_\_\_ TITLE \_\_\_\_\_  
I, \_\_\_\_\_, Secretary of Transportation, certify that this is a true and correct copy of the original.

Card No. 7B-c

### PLEASE HAVE YOUR REPRESENTATIVE CALL ME ABOUT THESE

- ☐ TRUCK PERMITTING SERVICE
- ☐ UNIT TAX ANALYSIS SYSTEM
- ☐ PERIODIC REPORTING SERVICE
- ☐ EMERGENCY PERMITS
- ☐ EXEMPT AUTHORITY PERMITS
- ☐ DRIVERS' LOG SURVEY
- ☐ PERMIT SURVEY
- ☐ SPECIAL SURVEYS
- ☐ OTHER (Specify) \_\_\_\_\_

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_  
ZIP \_\_\_\_\_ PHONE (A/C) \_\_\_\_\_

**J.J. KELLER & ASSOCIATES, INC.**  
145 W. WISCONSIN AVE. - NEENAH, WISCONSIN 54956  
Phone 800-558-5011 Toll Free 800-558-5012

### PLEASE SEND ME MORE INFORMATION ABOUT THESE

- ☐ TRUCKING SAFETY GUIDE
- ☐ TRUCKING PERMIT GUIDE
- ☐ NATIONAL BACKHAUL GUIDE
- ☐ LEASING GUIDE
- ☐ INTERSTATE MOTOR CARRIER FORMS MANUAL
- ☐ MOTOR CARRIER SAFETY REGULATIONS HANDBOOK
- ☐ TRUCK BROKER DIRECTORY
- ☐ MOTOR CARRIER SAFETY REPORT SERIES
- ☐ VEHICLE SIZES & WEIGHTS MANUAL
- ☐ DRIVERS GUIDE TO LOW OVERPASSES
- ☐ EMERGENCY & TRIP PERMIT HANDBOOK
- ☐ O.D.T. PERSONNEL & SAFETY FORMS
- ☐ COMPLETE QUALIFICATION FILE PACKET
- ☐ DRIVERS' SAFETY POCKETBOOK
- ☐ STOCK LOG BOOKS
- ☐ IMPRINTED LOG BOOKS
- ☐ CUSTOM LOG BOOKS
- ☐ VEHICLE INSPECTION REPORT BOOKS
- ☐ VEHICLE MAINTENANCE RECORD
- ☐ PADDED BILLS OF LADING
- ☐ SHAPOUT BILLS OF LADING
- ☐ LOG ENVELOPES

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_  
ZIP \_\_\_\_\_ PHONE (A/C) \_\_\_\_\_

**J.J. KELLER & ASSOCIATES, INC.**  
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**MKIL40617**

MK095027

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**McKesson**  
**Operations**

| Section                              | Reference  | Page           | End |
|--------------------------------------|------------|----------------|-----|
| TRANSPORTATION                       | 30.75      | 1              |     |
| Subject                              | Issue Date | Effective Date |     |
| PROCEDURES FOR COLD WEATHER STARTING | 9/15/85    | 9/15/85        |     |

GENERAL

Good maintenance and inspections are a must throughout the year to keep transportation equipment safe and in top running condition. Winter preparation, in reality, is nothing more than an extension of year-round maintenance and common sense. (See Exhibit 1, for Basic Winterizing Checklist.)

Additional steps are required to assure an engine starts well and runs efficiently in cold weather conditions. Many authorities say up to 90% of engine wear occurs during start-up when moving parts are not adequately lubricated. In cold weather when oil is stiff and doesn't flow freely, the problem is worse.

The regular maintenance shop should give special attention to systems, particularly:

- air intake
- cooling
- electrical, especially batteries
- engine lubrication
- fuel

When parking a truck for an extended period of time at an outside dock where it's exposed to severe wind and cold, make a 3-1/2' - 4' protective shield for the front sides of the truck.

DIESEL  
ENGINE  
PROCEDURES

For diesel engines, try normal starting procedures in cold weather as follows:

1. Apply parking brake.
2. Make sure transmission shift lever is in neutral position.
3. Fully depress clutch; do not pump accelerator.
4. Try starting a reasonable number of times.  
(Make certain manufacturer's instructions concerning cranking time are followed. Most do not recommend cranking continuously for more than 30 or 40 seconds without stopping to let the solenoid cool for one or two minutes.)

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## McKesson Operations

| Section                              | Reference  | Page           | End |
|--------------------------------------|------------|----------------|-----|
| TRANSPORTATION                       | 30.75      | 2              |     |
| Subject                              | Issue Date | Effective Date |     |
| PROCEDURES FOR COLD WEATHER STARTING | 9/15/85    | 9/15/85        |     |

DIESEL  
ENGINE  
PROCEDURES  
(Cont.)

5. Do not race engine to speed warm up. Do not run engine at more than 900 RPM until normal operating temperatures are reached. Also avoid long periods of idling as fuel returning from injectors forms condensate that winds up in fuel tank. Keep fuel tanks full at the end of run if vehicle will be left standing for an extended period of time as moisture will condense in a nearly empty tank.

STARTING FLUID. If engine fails to start and battery is strong, then starting fluids can be used, but only if absolutely necessary. They must be used with caution.

On vehicles with starting fluid cup, one 7cc capsule can be used during above zero temperatures, or two 7cc capsules when temperature is below zero. Force capsule(s) down onto painted tube in cup, and immediately start engine by the usual method.

If a pressurized spray-type starting fluid is used, a moderate amount should be directed into inlet areas of air-cleaner. No smoking while using starter fluids. Be careful not to inject too much ether into engine, because ether causes cylinder liner scuffing, or an explosion that could damage engine.

ENGINE HEATER. Preheating for engine coolant, battery and oil sump is a valuable starting aid. Except in severe cold conditions, engine or coolant preheating is usually sufficient for year-round starting.

Small fleets and single truck operations usually have no difficulty running heavy duty extension cords to their vehicles. Larger Service Centers may require a separate wiring system to stations where individual units may be plugged in. (Be certain that a competent electrician checks that circuits are adequate for the wattage requirements. Also, it is a good idea to stay with 115 volt heaters, particularly for vehicles in over-the-road service, since few 230 volt outlets may be found at hotels or other overnight locations. See Manufacturer's Wattage Recommendations, Exhibit 2.)

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**McKesson**  
Operations

| Section                              | Reference  | Page           | End |
|--------------------------------------|------------|----------------|-----|
| TRANSPORTATION                       | 30.75      | 3              | X   |
| Subject                              | Issue Date | Effective Date |     |
| PROCEDURES FOR COLD WEATHER STARTING | 9/15/85    | 9/15/85        |     |

DIESEL  
ENGINE  
PROCEDURES  
(Cont.)

Engine heaters may be obtained as an option when ordering new vehicles, or may be added to existing units. Follow the recommendations of vehicle manufacturer, or contact Regional Operations Manager.

An important goal is to reduce the downtime required for slow starting vehicles and warmup. Pre-heating, with the engine block at or near normal operating temperature, means the truck is ready to roll when the driver climbs in. The cab heater is also ready to operate.

GAS ENGINE  
PROCEDURES

Use normal starting procedures to start the engine.

1. Apply parking brake.
2. Make sure transmission shift lever is in neutral position.
3. Fully depress clutch, partially choke, or one pump on the accelerator, then hold halfway, as key is turned on.

STARTING FLUID. If engine fails to start after a reasonable number of times, and battery is strong, the pressurized spray-type ether starting fluid can be used. A moderate amount should be directed into inlet area of air-cleaner. Caution: If too much ether is injected into engine, it can cause cylinder scuffing, or an explosion that could damage engine. No smoking while using starter fluids.

Engine should be allowed to run just above idle until normal temperatures are reached. Never race engine to speed warmup.

ENGINE HEATER. Follow same instructions as for Diesel Engines, page 2, this subject, and Exhibit 2.

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## WINTERIZING CHECKLIST

This is a basic list of items to check before winter begins.

### FOR BETTER VISION

- All lights: function and aim
- Fog-driving lights
- Heater-defroster effective
- Mirrors: secure and clean
- Glass: free of cracks or discoloration
- Wiper motor and blade function

### MECHANICAL CONDITION

- Fuel: right type
- Filter maintenance
- Water removal from air, lube, fuel systems
- Electrical: charge rate o.k.
- Batteries: electrolyte, cables, tiedowns
- Antifreeze: inhibitor levels o.k.
- Lubrication: proper specs for winter
- Starting aids
- Fan, shutter, thermostat
- Starter system

### GENERAL

- Jumper cables
- Tire chains, tensioners and repair links
- Winter front
- Cab insulation, i.e., weather stripping
- Exhaust system leaks
- Window mechanisms

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MKIL189622

**ENGINE HEATER SELECTION GUIDE**  
**Manufacturer's Wattage Recommendations for Various Temperatures Under Normal Conditions**

To maintain optimum operating temperatures use  
 3 Watts/Cu. In. to -20° F  
 5 Watts/Cu. In. Below -20° F

| Desired<br>Temperatures<br>Based at<br>0° Fahrenheit | Gas<br>Engines<br>of 1 & 2<br>Cylinders | Gas<br>Engines Up<br>to 350 Cu. In.<br>Displacement | Gas Engines of<br>350-600 Cu. In.<br>Displacement<br><br>Diesel Engines<br>of 2 & 3 Cylinders<br>and Small 4 Cylinders | Gas Engines of<br>600-800 Cu. In.<br>Displacement<br><br>Diesel Engines<br>of 4 Cylinders | Gas Engines of<br>800-1200 Cu. In.<br>Displacement<br><br>Diesel Engines<br>of 6 Cylinders | Gas Engines Over<br>1200 Cu. In.<br>Displacement<br><br>Automotive Diesel<br>Engines of 7-12<br>Cylinders |
|--|---|---|--|---|--|---|
| 60° F  | 500                                     | 750   | 1000   | 1500  | 2000   | 5000  |
|  |   |   | 1000   | 1500  | 2000   | 4000  |
| 60° F to<br>80° F                                    | 500                                     | 750   | 1000   | 1500  | 2000   | 6000  |
|  |   |   | 1000   | 1500  | 2000   | 4000  |
| 80° F to<br>100° F                                   | 500                                     | 750   | 1000   | 2000  | 2500   | 6000  |
|  |   |   | 1000   | 2000  | 2500   | 4000  |
| 100° F to<br>120° F                                  | 5000                                    | 750   | 1000   | 2000  | 2500   | 9000  |
|  |   |   | 1000   | 2000  | 2500   | 4000  |
| 120° F to<br>140° F                                  | 500                                     | 750   | 1000   | 2000  | 4000   | 9000  |
|  |   |   | 1000   | 2500  | 2500   | 4000  |
| 140° F to<br>160° F                                  | 750                                     | 1000  | 1500   | 2500  | 4000   | 9000  |
|  |   |   | 1500   | 2500  | 2500   | 4000  |
| 160° F to<br>180° F                                  | 750                                     | 1000  | 1500   | 2500  | 4000   | 12000   |
|  |   |   | 1500   | 2500  | 4000   | 4000  |

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**McKesson**  
**Operations**

| Section  | Reference  | Page           | End |
|--|------------|----------------|-----|
| TRANSPORTATION                                 | 30.80      | 1              | X   |
| Subject  | Issue Date | Effective Date |     |
| TRANSFER OF CHEMICAL PRODUCTS:<br>TWO MAN RULE | 6/30/86    | 6/30/86        |     |

POLICY

1. There must be two active participants in any bulk loading/unloading or product repackaging, including transfers occurring during the weekend.
2. Participants, including truck drivers, MUST have visual contact with and be accessible to the transfer process to facilitate emergency response.
3. If the transfer involves products loading/unloading packaged freight, it is permissible to have only one active participant.

MKIL40623

MK005033

MKIL189624

# **Attachment “O”**

Please print or type (Form designed for use on site)

|   |  |  |                               |   |      |   |                   |
|---|--|--|-------------------------------|---|------|---|-------------------|
| <b>UNIFORM HAZARDOUS WASTE MANIFEST</b>   |  | Generator's US EPA ID No.<br>CAD 060395753 | Manifest Document No.<br>6071 | Page 1 of 1                                   |      | Information in the shaded areas is not required by Federal law. |                   |
| 3. Generator's Name and Mailing Address<br>McKesson Chemical<br>9005 Sorensen Av. Santa Fe Springs, Ca. 90670   |  |  |                               | A. State Manifest Document Number<br>84254602 |      |   |                   |
| 4. Generator's Phone ( 713 ) 946-6491   |  |  |                               | B. State Generator's ID<br>CAD 060395753      |      |   |                   |
| 5. Transporter 1 Company Name<br>Calif. Chem Disposal   |  |  |                               | C. State Transporter's ID<br>708806           |      |   |                   |
| 6. US EPA ID Number<br>CAD 980735310  |  |  |                               | D. Transporter's Phone<br>213 834-8077        |      |   |                   |
| 7. Transporter 2 Company Name   |  |  |                               | E. State Transporter's ID                     |      |   |                   |
| 8. US EPA ID Number   |  |  |                               | F. Transporter's Phone                        |      |   |                   |
| 9. Designated Facility Name and Site Address<br>Romic<br>2081 Bay Rd.<br>E. Palo Alto, Ca. 94303  |  |  |                               | G. State Facility's ID<br>CA0009452657        |      |   |                   |
| 10. US EPA ID Number<br>CAD 009452657   |  |  |                               | H. Facility's Phone<br>(415) 324-1638         |      |   |                   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  |  |                               | 12. Containers<br>No.                         | Type | 13. Total Quantity  | 14. Unit<br>M/Vol |
| a. RQ 100<br>Waste Flammable Liquid, NOS, UN1993 DOT E8822  |  |  |                               | 001   | TT   | 4700  | G                 |
| b.  |  |  |                               |   |      |   |                   |
| c. McKESSON v. CNA<br>NO. 911659  |  |  |                               |   |      |   |                   |
| d. NAME EXHIBIT # DATE  |  |  |                               |   |      |   |                   |
| 15. Additional Descriptions for Materials Listed Above<br>Methyl Ethyl Ketone, Acetone, Glycol Ether EB,<br>Glycol Ether EE, Toluene, 1,1,1, Trichloroethane<br>misc. Aliphatics & Aromatics  |  |  |                               | K. Handling Codes for Wastes Listed Above     |      |   |                   |
| 16. Special Handling Instructions and Additional Information<br>Gloves, goggles, avoid skin contact & sources of ignition   |  |  |                               |   |      |   |                   |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |  |                               |   |      |   |                   |
| Printed/Typed Name<br>Craig Robitaille  |  |  |                               | Signature<br><i>[Signature]</i>               |      | Date<br>Month Day Year<br>10 27 86                              |                   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials   |  |  |                               | Signature<br><i>[Signature]</i>               |      | Date<br>Month Day Year<br>10 27 86                              |                   |
| Printed/Typed Name<br>George Garcia   |  |  |                               | Signature<br><i>[Signature]</i>               |      | Date<br>Month Day Year<br>10 27 86                              |                   |
| 18. Transporter 2 Acknowledgement or Receipt of Materials   |  |  |                               | Signature                                     |      | Date  |                   |
| Printed/Typed Name<br><i>[Signature]</i>  |  |  |                               | Signature                                     |      | Date<br>Month Day Year  |                   |
| 19. Discrepancy Indication Space  |  |  |                               |   |      |   |                   |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |  |                               |   |      |   |                   |
| Printed/Typed Name<br>G. R. Ellison   |  |  |                               | Signature<br><i>[Signature]</i>               |      | Date<br>Month Day Year<br>11 28 86                              |                   |

Please print or type (Form designed for use on elite (12-pitch) typewriter.)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>CAD 060395753 | Manifest Document No.<br>6125                   | 2. Page 1 of 1     | Information in the shaded areas is not required by Federal law. |               |
|---|--|---|---|--------------------|---|---------------|
| 3. Generator's Name and Mailing Address<br>McKesson Chemical<br>9005 Sorensen Av., Santa Fe Springs, Ca. 90670<br>4. Generator's Phone (714) 946-6462   |  |   | A. State Manifest Document Number<br>84254604   |                    |   |               |
| 5. Transporter 1 Company Name<br>Calif. Chemical Disposal   |  |   | B. State Generator's ID<br>CAD 060395753        |                    |   |               |
| 6. US EPA ID Number<br>CAD 980735310  |  |   | C. State Transporter's ID                       |                    |   |               |
| 7. Transporter 2 Company Name   |  |   | D. Transporter's Phone 708808                   |                    |   |               |
| 8. US EPA ID Number   |  |   | E. State Transporter's ID                       |                    |   |               |
| 9. Designated Facility Name and Site Address<br>Romic<br>2081 Bay Rd.<br>E. Palo Alto, Ca. 94303  |  |   | F. Transporter's Phone                          |                    |   |               |
| 10. US EPA ID Number<br>CAD 009452657   |  |   | G. State Facility's ID<br>CAD 009452657         |                    |   |               |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  |   | H. Facility's Phone<br>(415) 324-1638           |                    |   |               |
| a. RQ-100, Waste Flammable Liquid, NOS, UN1993<br>DOT E7476   |  |   | 12. Containers<br>No. Type                      | 13. Total Quantity | 14. Unit Wt/Vol   | 15. Waste No. |
|   |  |   | 001 TT  | 2200               | G   | 214           |
| b. McKESSON v. CNA<br>NO. 910654  |  |   |   |                    |   |               |
| c. Robitaille 034-015 2-24-74<br>NAME EXHIBIT # DATE  |  |   |   |                    |   |               |
| d.  |  |   |   |                    |   |               |
| 16. Additional Descriptions for Materials Listed Above<br>Methyl Ethyl Ketone, Acetone, Glycol Ether EB,<br>Glycol Ether EB, Toluene, 1,1,1, Trichloroethane<br>Misc. Aliphatics & Aromatics  |  |   | K. Handling Codes for Wastes Listed Above<br>01 |                    |   |               |
| 17. Special Handling Instructions and Additional Information<br>Gloves, goggles, avoid skin contact & sources of ignition   |  |   |   |                    |   |               |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |   |   |                    |   |               |
| Printed/Typed Name<br>Craig Robitaille  |  |   | Signature<br><i>Craig Robitaille</i>            |                    | Date<br>Month Day Year<br>10 12 86                              |               |
| 17. Transporter 1 Acknowledgement of Receipt of Materials   |  |   | Signature<br><i>John Strausser</i>              |                    | Date<br>Month Day Year<br>10 12 86                              |               |
| Printed/Typed Name<br>John Strausser  |  |   | Signature                                       |                    | Date  |               |
| 18. Transporter 2 Acknowledgement of Receipt of Materials   |  |   | Signature                                       |                    | Date  |               |
| Printed/Typed Name  |  |   | Signature                                       |                    | Date  |               |
| 19. Discrepancy Indication Space<br>HS01716   |  |   |   |                    |   |               |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |   |   |                    |   |               |
| Printed/Typed Name<br>Gregg Ellison   |  |   | Signature<br><i>Gregg Ellison</i>               |                    | Date<br>Month Day Year<br>10 12 86                              |               |

## GENERATOR COPY

Please print or type (Form designed for generator use in typewritten form)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>C A D 0 7 4 8 1 2 5      | Manifest Document No. | 2. Page 1 of                        | Information in the shaded areas is not required by Federal law |
|---|--|--|-----------------------|-------------------------------------|--|
| 3. Generator's Name and Mailing Address<br>McKesson Chemical, 9005 Stevenson Avenue,<br>Santa Fe Springs, Ca. 90670   |  | 4. Generator's Phone ( ) 944-6481                        |                       | 5. State Transporter's ID           |  |
| 6. Transporter 1 Company Name<br>Calif. Chemical Disp.  |  | 7. Transporter 1 US EPA ID Number<br>C A D 0 7 4 8 1 2 5 |                       | 8. Transporter 1 Phone ( ) 944-6481 |  |
| 9. Designated Facility Name and Site Address<br>Camalia Resources<br>NTU Road<br>Camalia, Ca. 93420   |  | 10. Facility's US EPA ID Number<br>C A D 0 7 4 8 1 2 5   |                       | 11. Facility's Phone ( ) 944-6481   |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  | 12. Containers<br>No. Type                               |                       | 13. Total Quantity                  | 14. Unit<br>M/V/Vol  |
| a. Sodium Sulfate sludge, 131385  |  | 3 IM   |                       | 1500                                | lb   |
| b.  |  |  |                       |                                     |  |
| c.  |  |  |                       |                                     |  |
| d.  |  |  |                       |                                     |  |
| 15. Special Handling Instructions and Additional Information<br>Gloves, goggles, avoid skin contact   |  | 16. Manifest Codes for Wastes Listed Above               |                       |                                     |  |
| 17. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |  |                       |                                     |  |
| Printed/Typed Name<br>Craig   |  | Signature<br><i>[Signature]</i>                          |                       | Date<br>Month Day Year              |  |
| 17. Transporter 1 Acknowledgment of Receipt of Materials<br>Printed/Typed Name<br>John H. [Signature]   |  | Signature<br><i>[Signature]</i>                          |                       | Date<br>Month Day Year<br>4/16/86   |  |
| 18. Transporter 2 Acknowledgment of Receipt of Materials<br>Printed/Typed Name  |  | Signature  |                       | Date<br>Month Day Year              |  |
| 19. Discrepancy Indication Space  |  |  |                       |                                     |  |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>#73272  |  |  |                       |                                     |  |
| Printed/Typed Name<br>Camalia Resources   |  | Signature<br>Alice Cristina Quinn                        |                       | Date<br>Month Day Year<br>12/21/86  |  |

DHS 8022 A (7/84)  
(EPA 8700-22)

Yellow: TSDP SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

04 08947

McKESSON v. CNA  
NO. 910659  
Robitaille 034-008 224.94  
NAME EXHIBIT # DATE

MK00010053

MKIL00897

Please print or type (Form designed for use on elite (12-pitch) typewriter)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>CAD 060395753 | Manifest Document No.                           | 2. Page 1 of       | Information in the shaded areas is not required by Federal law |
|---|--|---|---|--------------------|--|
| 3. Generator's Name and Mailing Address<br>McKesson Chemical, 9005 Sorensen Av.<br>Santa Fe Springs, Ca. 90670  |  |   | A. State Manifest Document Number<br>84524613   |                    |  |
| 4. Generator's Phone (213) 946-6491   |  |   | B. State Generator's ID<br>CAD 060395753        |                    |  |
| 5. Transporter 1 Company Name<br>California Chemical Disposal   |  |   | C. State Transporter's ID<br>CAD 980733310      |                    |  |
| 6. Transporter 1 US EPA ID Number   |  |   | D. Transporter's Phone<br>213 854-8077          |                    |  |
| 7. Transporter 2 Company Name   |  |   | E. State Transporter's ID                       |                    |  |
| 8. Transporter 2 US EPA ID Number   |  |   | F. Transporter's Phone                          |                    |  |
| 9. Designated Facility Name and Site Address<br>General Portland / Systech<br>P.O. Box 837-S.5 mi. N.E. of Gorman off Rt. 138<br>Loboc, Ca. 93243   |  |   | G. State Facility's ID<br>CAT 080031628         |                    |  |
| 10. Designated Facility US EPA ID Number  |  |   | H. Facility's Phone<br>805 248-6748             |                    |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  |   | 12. Containers                                  | 13. Total Quantity | 14. Unit   |
|   |  |   | No.   | Type               | Wt/Vol   |
| a. Liquid Hazardous Waste, Flammable Liquid N.O.S.<br>UN1993  |  |   | 001   | 1b                 | 59080  |
| b.  |  |   |   |                    |  |
| c.  |  |   |   |                    |  |
| d.  |  |   |   |                    |  |
| J. Additional Descriptions for Materials Listed Above<br>Alcohols 301 Chlorinated 131 Esters 61<br>Ketones 208 Glycol Ethers 91<br>Hydrocarbons 154 Glycols 71  |  |   | K. Handling Codes for Wastes Listed Above<br>99 |                    |  |
| 15. Special Handling Instructions and Additional Information<br>Must wear face shield, product resistant apron, gloves, and shoes   |  |   |   |                    |  |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |   |   |                    |  |
| Printed/Typed Name<br>Craig Robitaille  |  |   | Signature<br><i>[Signature]</i>                 |                    | Date<br>Month Day Year<br>12 01 86                             |
| 17. Transporter 1 Acknowledgement of Receipt of Materials   |  |   | Signature<br><i>[Signature]</i>                 |                    | Date<br>Month Day Year<br>08 86                                |
| Printed/Typed Name<br>Nevin D. Jones  |  |   | Signature<br><i>[Signature]</i>                 |                    | Date<br>Month Day Year<br>08 86                                |
| 18. Transporter 2 Acknowledgement of Receipt of Materials   |  |   | Signature                                       |                    | Date<br>Month Day Year   |
| Printed/Typed Name  |  |   | Signature                                       |                    | Date<br>Month Day Year   |
| 19. Discrepancy Indication Space  |  |   |   |                    |  |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |   |   |                    |  |
| Printed/Typed Name<br>Mark Luciani  |  |   | Signature<br><i>[Signature]</i>                 |                    | Date<br>Month Day Year<br>05 11 86                             |

Please print or type. (Form designed for use on auto 12-pin printer)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>C-0000000000 | Manifest Document No.                           | 2. Page 1 of       | Information in the shaded areas is not required by Federal law. |
|---|--|--|---|--------------------|---|
| 3. Generator's Name and Mailing Address<br>McKesson Chemical<br>9005 SORESENSEN AVE, SANTA FE SPRINGS, CA. 90670  |  |  | A. State Manifest Document Number<br>84524617   |                    |   |
| 4. Generator's Phone (213) 946-6491   |  |  | B. State Generator's ID<br>CAD 0603957538440    |                    |   |
| 5. Transporter 1 Company Name<br>CALIF. CHEM. DISPOSAL  |  |  | C. State Transporter's ID<br>53243              |                    |   |
| 6. US EPA ID Number<br>C-0000000000   |  |  | D. Transporter's Phone<br>213-834-8077          |                    |   |
| 7. Transporter 2 Company Name   |  |  | E. State Transporter's ID                       |                    |   |
| 8. US EPA ID Number   |  |  | F. Transporter's Phone                          |                    |   |
| 9. Designated Facility Name and Site Address<br>GENERAL PORTLAND SYSTECH<br>P. O. BOX 837 5 1 MILES N. E. OF GORMAN OFF RT 138<br>LEBEC, CA. 93243  |  |  | G. State Facility's ID<br>CAT080031629          |                    |   |
| 10. US EPA ID Number<br>CAT080031629  |  |  | H. Facility's Phone<br>578-5749 Area Code 805   |                    |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  |  | 12. Containers<br>No. Type                      | 13. Total Quantity | 14. Unit Wt/Vol   |
| a. FLAMMABLE LIQUID NOS - WASTE SOLVENT UN 1993   |  |  | 31  | 3450               | 214   |
| b.  |  |  |   |                    |   |
| c.  |  |  |   |                    |   |
| d.  |  |  |   |                    |   |
| 15. Additional Descriptions for Materials Listed Above<br>METHYL ETHYL KETONE & ACETONE<br>GLYCOL ETHER EE & EE - GLYCOL ETHER EE<br>STOLUEN<br>1,1,1, TRICHLOROETHANE, MISC. ALIPHATIC & AROMATIC SOLVENTS   |  |  | K. Handling Codes for Wastes Listed Above<br>99 |                    |   |
| 16. Special Handling Instructions and Additional Information<br>GLOVES, GOGGLES, AVOID SKIN CONTACT AND SOURCES OF IGNITION   |  |  |   |                    |   |
| 17. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |  |   |                    |   |
| Printed/Typed Name<br>CRAIG ROBITAILLE  |  |  | Signature<br>Craig Robitaille                   |                    | Date<br>Month Day Year<br>7/31/86                               |
| 17. Transporter 1 Acknowledgement of Receipt of Materials   |  |  | Signature<br>Ed Jackson                         |                    | Date<br>Month Day Year<br>7/31/86                               |
| 18. Transporter 2 Acknowledgement of Receipt of Materials   |  |  | Signature                                       |                    | Date<br>Month Day Year  |
| 19. Discrepancy Indication Space  |  |  |   |                    |   |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |  |   |                    |   |
| Printed/Typed Name<br>Mark Looman   |  |  | Signature<br>Mark Looman                        |                    | Date<br>Month Day Year<br>7/31/86                               |

Please print or type (Form designed for use on site (12-inch) typewriter)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>C A D 0 6 0 3 9 5 7 5 5 | Manifest Document No. | 2. Page 1 of                      | Information in the shaded areas is not required by Federal law. |
|---|--|---|-----------------------|-----------------------------------|---|
| 3. Generator's Name and Mailing Address<br>McKesson Chemical, 9008 Sorenson Av.<br>Santa Fe Springs, Ca. 90670  |  | 4. Generator's Phone ( 813 ) 946-6491                   |                       | 5. State Government's ID          |   |
| 5. Transporter 1 Company Name<br>California Chemical Disposal   |  | 6. US EPA ID Number<br>C A D 9 8 0 7 3 5 3 1 0          |                       | 7. State Transporter's ID         |   |
| 7. Transporter 2 Company Name   |  | 8. US EPA ID Number                                     |                       | 9. State Transporter's ID         |   |
| 9. Designated Facility Name and Site Address<br>General Portland / Systech<br>P.O. Box 837-S.S. mi. N.E. of Gorman off Rt. 158<br>Lebec, Ca. 93243  |  | 10. US EPA ID Number                                    |                       | 11. State Facility's ID           |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  | 12. Containers  |                       | 13. Total Quantity                | 14. Unit  |
| a. Liquid Hazardous Waste, Flammable Liquid N.O.S.<br>UN1993  |  | No. 1 Type 1b   |                       | 39000                             | 1b  |
| b.  |  |   |                       |                                   |   |
| c.  |  |   |                       |                                   |   |
| d.  |  |   |                       |                                   |   |
| 15. Special Handling Instructions and Additional Information<br><br>Must wear face shield, protect resistant apron, gloves, and shoes   |  |   |                       |                                   |   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |   |                       |                                   |   |
| Printed/Typed Name<br>Craig Robitaille  |  | Signature<br><i>Craig Robitaille</i>                    |                       | Date<br>Month Day Year<br>2 24 94 |   |
| 17. Transporter 1 Acknowledgement or Receipt of Materials   |  | Signature<br><i>Marvin D. Jones</i>                     |                       | Date<br>Month Day Year<br>3 1 94  |   |
| Printed/Typed Name<br>Marvin D. Jones   |  | Signature   |                       | Date<br>Month Day Year            |   |
| 18. Transporter 2 Acknowledgement or Receipt of Materials   |  | Signature   |                       | Date<br>Month Day Year            |   |
| Printed/Typed Name  |  | Signature   |                       | Date<br>Month Day Year            |   |
| 19. Discrepancy Indication Space  |  |   |                       |                                   |   |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |   |                       |                                   |   |
| Printed/Typed Name  |  | Signature   |                       | Date<br>Month Day Year            |   |

DHS 8022 A (7/84)  
(EPA 5700-22)

Yellow: GENERATOR RETAINS

DH 80241

McKESSON v. CNA  
NO. 910659  
Robitaille 034-009 2-24-94  
NAME EXHIBIT # DATE

MK00010064

MKIL00899

Please print or type. (Form designed for use on nine (12-pitch) typewriter.)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>CAD 060395753 | Manifest Document No. | 2. Page 1 of       | Information in the shaded areas is not required by Federal law. |
|---|--|---|-----------------------|--------------------|---|
| 3. Generator's Name and Mailing Address<br>McKesson Chemical, 9005 Sacramento St.<br>Santa Fe Springs, Ca. 90670  |  |   |                       |                    |   |
| 4. Generator's Phone (213) 844-6491   |  |   |                       |                    |   |
| 5. Transporter 1 Company Name<br>California Chemical Disposal   |  |   |                       |                    |   |
| 6. US EPA ID Number<br>CAD 980733330  |  |   |                       |                    |   |
| 7. Transporter 2 Company Name   |  |   |                       |                    |   |
| 8. US EPA ID Number   |  |   |                       |                    |   |
| 9. Designated Facility Name and Site Address<br>General Portland / Systech<br>P.O. Box 837-S.S. rd. N.E. of Germann off Rt. 130<br>Lebec, Ca. 93243   |  |   |                       |                    |   |
| 10. US EPA ID Number  |  |   |                       |                    |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  | 12. Containers                                |                       | 13. Total Quantity | 14. Unit Wt/Vol   |
| a. Liquid Hazardous Waste, Flammable Liquid N.O.S.<br>UN1993  |  | No. 001 Type 1b                               |                       | 39060              | 1b  |
| b.  |  |   |                       |                    |   |
| c.  |  |   |                       |                    |   |
| d.  |  |   |                       |                    |   |
| 15. Special Handling Instructions and Additional Information<br><br>Must wear face shield, protect resistant apron, gloves, and shoes   |  |   |                       |                    |   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |   |                       |                    |   |
| Printed/Typed Name<br>Craig Robinson  |  | Signature<br><i>Craig Robinson</i>            |                       | Date<br>12/1/86    |   |
| 17. Transporter 1 Acknowledgment of Receipt of Materials  |  | Signature<br><i>Mark D. Luman</i>             |                       | Date<br>12/1/86    |   |
| Printed/Typed Name<br>Mark D. Luman   |  | Signature                                     |                       | Date               |   |
| 18. Transporter 2 Acknowledgment of Receipt of Materials  |  | Signature                                     |                       | Date               |   |
| Printed/Typed Name  |  | Signature                                     |                       | Date               |   |
| 19. Discrepancy Indication Space  |  |   |                       |                    |   |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |   |                       |                    |   |
| Printed/Typed Name<br>Mark Luman  |  | Signature<br><i>Mark Luman</i>                |                       | Date<br>05/21/86   |   |

Please print or type. Form designed for use on elite (12-pitch) typewriter.

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID Number<br>CA0060395753 | 2. Page 1 of 1     | Information in the shaded areas is not required by Federal law. |
|---|--|---|--------------------|---|
| 3. Generator's Name and Mailing Address<br>MC KESSON CHEMICAL 9005 SHERIDAN AVE<br>SANTA FE SPRINGS CA 90670  |  |   |                    |   |
| 4. Generator's Phone (213) 944-6491   |  |   |                    |   |
| 5. Transporter 1 Company Name<br>CASHIACHO RESOURCE   |  | 6. US EPA ID Number<br>CA00980735310            |                    |   |
| 7. Transporter 2 Company Name   |  | 8. US EPA ID Number                             |                    |   |
| 9. Designated Facility Name and Site Address<br>CASHIACHO RESOURCE<br>ATC RD<br>CASHIACHO CA 93424  |  | 10. US EPA ID Number<br>CA001126744125          |                    |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  | 12. Containers No.                              | 13. Total Quantity | 14. Unit Wt/Vol   |
| a. SOLID HAZARDOUS WASTE CORROSIVE SOLID NPS. UN1759  |  | 1   | 45                 | KG  |
| b. CORROSIVE SOLID UN 1759  |  |   |                    |   |
| c.  |  |   |                    |   |
| d.  |  |   |                    |   |
| 15. Special Handling Instructions and Additional Information<br>MUST WEAR FACE SHIELD PROTECT RESISTANT APRON GLOVES. SHUDES<br>TO REPLACE 2 DRUMS REQUIRED ON MANIFEST # 8452445 4/3/86  |  |   |                    |   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |   |                    |   |
| Printed/Typed Name<br>Craig R. Babbitt  |  | Signature<br>Craig R. Babbitt                   |                    | Date<br>6/13/86   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials   |  | Signature<br>Tom Grant                          |                    | Date<br>6/13/86   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials   |  | Signature<br>Tom Grant                          |                    | Date<br>6/13/86   |
| 19. Discrepancy Indication Space  |  |   |                    |   |
| 20. Facility, Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. # 75864   |  |   |                    |   |
| Printed/Typed Name<br>CASHIACHO RESOURCE  |  | Signature<br>Craig R. Babbitt                   |                    | Date<br>6/13/86   |

DHS 8022 A (11/84)  
(EPA 8700-22)

YELLOW: TSDf SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

64 60641

McKESSON v. CNA  
NO. 910659  
Robitaille 034-010 2-24-94  
NAME EXHIBIT # DATE

MK00010068

MKIL00903

Please print or type. (Form designed for use on nine 112-pitch typewriter.)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>CAD 060395753 | Manifest Document No.<br>6036                          | 2. Page 1 of 1     | Information in the shaded areas is not required by Federal law. |
|---|--|---|--|--------------------|---|
| 3. Generator's Name and Mailing Address<br><b>McKesson Chemical</b><br>9005 Sorensen Av., Santa Fe Springs, Ca. 90670   |  |   | A. State Manifest Document Number<br><b>84524616</b>   |                    |   |
| 4. Generator's Phone ( )  |  |   | B. State Generator's ID<br><b>CAD060395753</b>         |                    |   |
| 5. Transporter 1 Company Name<br><b>Calif. Chemical Disposal</b>  |  | 6. US EPA ID Number<br><b>CAD 980735310</b>   | C. State Transporter's ID<br><b>708204</b>             |                    |   |
| 7. Transporter 2 Company Name   |  | 8. US EPA ID Number                           | D. Transporter's Phone<br><b>713 834-8077</b>          |                    |   |
| 9. Designated Facility Name and Site Address<br><b>Casmalia Resources</b><br>NTU Rd.<br>Casmalia, Ca. 93420   |  | 10. US EPA ID Number<br><b>CAD 020748175</b>  | E. State Transporter's ID                              |                    |   |
|   |  |   | F. Transporter's Phone                                 |                    |   |
|   |  |   | G. State Facility's ID<br><b>CAD 020748125</b>         |                    |   |
|   |  |   | H. Facility's Phone<br><b>805 937-8449</b>             |                    |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  |   | 12. Containers No.                                     | 13. Total Quantity | 14. Unit Wt/Vol   |
| a. <b>5B UN 1325</b><br>Flammable Solid, Flammable Solid NOS, UN1993  |  |   | 3  | DM                 | 900   |
| b. Corrosive Solid, Corrosive Solid NOS, UN1759   |  |   | 16   | DM                 | 8000  |
| c. <b>McKESSON v. CNA</b><br>NO. <b>910659</b>  |  |   |  |                    |   |
| d. <b>Robitaille</b><br>NAME EXHIBIT # DATE   |  |   |  |                    |   |
| 15. Additional Descriptions<br>a) Cleanup material from spill<br>b) sludge from pit containing lime salt calcium  |  |   | K. Handling Codes for Wastes Listed Above<br><b>03</b> |                    |   |
| 16. Special Handling Instructions and Additional Information<br><b>Must wear face shield, product resistant apron &amp; gloves, safety shoes</b>  |  |   |  |                    |   |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  |   |  |                    |   |
| Printed/Typed Name<br><b>Craig Robitaille</b>   |  |   | Signature<br><i>[Signature]</i>                        |                    | Date<br>Month Day Year<br><b>10 23 86</b>                       |
| 17. Transporter 1 Acknowledgement of Receipt of Materials   |  |   | Signature<br><i>[Signature]</i>                        |                    | Date<br>Month Day Year<br><b>10 23 86</b>                       |
| Printed/Typed Name<br><b>Dale Schuessler</b>  |  |   | Signature<br><i>[Signature]</i>                        |                    | Date<br>Month Day Year<br><b>10 23 86</b>                       |
| 18. Transporter 2 Acknowledgement of Receipt of Materials   |  |   | Signature  |                    | Date<br>Month Day Year  |
| Printed/Typed Name  |  |   | Signature  |                    | Date<br>Month Day Year  |
| 19. Discrepancy Indication Space  |  |   |  |                    |   |
| 20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. # <b>81126</b>   |  |   |  |                    |   |
| Printed/Typed Name<br><b>Casmalia Resources/Marketing</b>   |  |   | Signature<br><i>[Signature]</i>                        |                    | Date<br>Month Day Year<br><b>11 01 24 88</b>                    |

Please print or type (Form designed for use on alpha (12-pitch) typewriter)

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.<br>CND 06039595   | Manifest Document No. | 2. Page 1 of                              | Information in the shaded areas is not required by Federal law |
|---|--|--|-----------------------|---|--|
| 3. Generator's Name and Mailing Address<br>McLasson Chemical<br>9005 SCHUMMER AVE, SUITE 20 SPRINGS, CA 90670   |  | 4. Generator's Phone (916) 944-440   |                       | 5. State Generator's ID<br>CND 06039595   |  |
| 6. Transporter 1 Company Name<br>CALIF. CHEM. DISPOSAL  |  | 7. US EPA ID Number<br>(CND) 91070000  |                       | 8. State Transporter's ID<br>CND 91070000 |  |
| 9. Transporter 2 Company Name   |  | 10. US EPA ID Number   |                       | 11. State Transporter's ID                |  |
| 12. Designated Facility Name and Site Address<br>GENERAL PORTLAND SYSTEM<br>P. O. BOX 837 S 1 MILES N. E. OF GORDMAN OFF RT 150<br>LEWIS, CA 93243  |  | 13. US EPA ID Number<br>CAT080031629   |                       | 14. State Facility's ID<br>CAT080031629   |  |
| 15. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  | 16. Containers   |                       | 17. Total Quantity                        |  |
| a. FLAMMABLE LIQUID NOS - WASTE SOLVENT UN 1993   |  | No. Type   |                       | Unit                                      |  |
|   |  | 3450   |                       | 3450                                      |  |
| b.  |  |  |                       |   |  |
| c.  |  |  |                       |   |  |
| d.  |  |  |                       |   |  |
| 18. Special Handling Instructions and Additional Information<br>GLOVES, GOGGLES, AVOID SKIN CONTACT AND SOURCES OF IGNITION   |  | 19. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. |                       |   |  |
| 20. Generator's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. |  | 21. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. |                       |   |  |
| 22. Generator's Signature<br>Craig R. Kottel  |  | 23. Signature<br>Craig R. Kottel   |                       | 24. Date<br>07/31/86                      |  |
| 25. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>C. J. Jackson  |  | 26. Signature<br>C. J. Jackson   |                       | 27. Date<br>07/31/86                      |  |
| 28. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name   |  | 29. Signature  |                       | 30. Date                                  |  |
| 31. Discrepancy Indication Space  |  | 32. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. |                       |   |  |
| 33. Printed/Typed Name<br>Mark Looman   |  | 34. Signature<br>Mark Looman   |                       | 35. Date<br>07/31/86                      |  |

Please print or type. (Form designed for use on elite (12-pitch typewriter).)

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.   | Manifest Document No. | 2. Page 1 of 1                                       | Information in the shaded areas is not required by Federal law. |
|--|--|--|-----------------------|--|---|
| 3. Generator's Name and Mailing Address<br>McKesson Corporation<br>One Post St., 28th Floor, San Francisco, CA 94104<br>4. Generator's Phone (415) 983-7598 J. Mescher |  | 5. Transporter 1 Company Name<br>Pacific Environmental Mgmt Corp   |                       | A. State Manifest Document Number<br>89733537        |   |
| 6. US EPA ID Number<br>C A D 9 8 2 0 5 3 7 7 9   |  | 7. Transporter 2 Company Name  |                       | B. State Generator's ID<br>H A H 0 3 8 - 0 3 8 0 7 0 |   |
| 8. US EPA ID Number  |  | 9. Designated Facility Name and Site Address<br>Chem-Tech Systems Inc.<br>3640 E. 26th St.<br>Vernon, CA 90023   |                       | C. State Transporter's ID<br>104084                  |   |
| 10. US EPA ID Number<br>C A T 0 8 0 0 3 3 6 8 1  |  | 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)<br>Non RCRA Hazardous Waste Liquid<br>(Contaminated Groundwater)  |                       | D. Transporter's Phone (213) 324-2445                |   |
| 12. Containers<br>No. Type   |  | 13. Total Quantity   |                       | E. State Transporter's ID                            |   |
| 14. Unit<br>Wt/Vol   |  | 15. Waste No.  |                       | F. Transporter's Phone                               |   |
| 16. State  |  | 17. EPA/Other  |                       | G. State Facility's ID                               |   |
| 18. State  |  | 19. EPA/Other  |                       | H. Facility's Phone                                  |   |
| 19. State  |  | 20. EPA/Other  |                       | (213) 268-5056                                       |   |
| 21. Additional Descriptions for Materials Listed Above<br>Groundwater 99-100 %<br>Solvents <.01%   |  | 22. Handling Codes for Wastes Listed Above<br>a. b. c. d.  |                       | I. Waste No.<br>343<br>EPA/Other<br>N/A              |   |
| 23. Special Handling Instructions and Additional Information<br>24-Hour Emergency Phone # (213) 324-2445<br>Wear Appropriate Protection Gear                           |  | 24. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |                       | 25. Printed/Typed Name<br>JEAN A MESCHER             |   |
| 26. Signature  |  | 27. Month Day Year<br>02 29 91   |                       | 28. Printed/Typed Name<br>Alfred A. Lopez            |   |
| 29. Signature  |  | 30. Month Day Year<br>02 29 91   |                       | 31. Printed/Typed Name                               |   |
| 32. Signature  |  | 33. Month Day Year   |                       | 34. Discrepancy Indication Space<br>MK085373         |   |
| 35. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.                                    |  | 36. Printed/Typed Name   |                       | 37. Signature  |   |
| 38. Month Day Year   |  | 39. Printed/Typed Name   |                       | 40. Signature  |   |
| 41. Month Day Year   |  | 42. Printed/Typed Name   |                       | 43. Signature  |   |
| 44. Month Day Year   |  | 45. Printed/Typed Name   |                       | 46. Signature  |   |
| 47. Month Day Year   |  | 48. Printed/Typed Name   |                       | 49. Signature  |   |
| 50. Month Day Year   |  | 51. Printed/Typed Name   |                       | 52. Signature  |   |
| 53. Month Day Year   |  | 54. Printed/Typed Name   |                       | 55. Signature  |   |
| 56. Month Day Year   |  | 57. Printed/Typed Name   |                       | 58. Signature  |   |
| 59. Month Day Year   |  | 60. Printed/Typed Name   |                       | 61. Signature  |   |
| 62. Month Day Year   |  | 63. Printed/Typed Name   |                       | 64. Signature  |   |
| 65. Month Day Year   |  | 66. Printed/Typed Name   |                       | 67. Signature  |   |
| 68. Month Day Year   |  | 69. Printed/Typed Name   |                       | 70. Signature  |   |
| 71. Month Day Year   |  | 72. Printed/Typed Name   |                       | 73. Signature  |   |
| 74. Month Day Year   |  | 75. Printed/Typed Name   |                       | 76. Signature  |   |
| 77. Month Day Year   |  | 78. Printed/Typed Name   |                       | 79. Signature  |   |
| 80. Month Day Year   |  | 81. Printed/Typed Name   |                       | 82. Signature  |   |
| 83. Month Day Year   |  | 84. Printed/Typed Name   |                       | 85. Signature  |   |
| 86. Month Day Year   |  | 87. Printed/Typed Name   |                       | 88. Signature  |   |
| 89. Month Day Year   |  | 90. Printed/Typed Name   |                       | 91. Signature  |   |
| 92. Month Day Year   |  | 93. Printed/Typed Name   |                       | 94. Signature  |   |
| 95. Month Day Year   |  | 96. Printed/Typed Name   |                       | 97. Signature  |   |
| 98. Month Day Year   |  | 99. Printed/Typed Name   |                       | 100. Signature                                       |   |

89733537

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

GENERATOR

TRANSPORTER

FACILITY

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IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7650

89733557

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>CA1D060395753 |  | Manifest Document No. | 2. Page 1 of 1   | Information in the shaded areas is not required by Federal law. |                                  |
|--|--|---|--|-----------------------|--|---|----------------------------------|
| 3. Generator's Name and Mailing Address<br>McKesson Corporation<br>One Post St., 28th Floor, San Francisco, CA 94104<br>4. Generator's Phone (415) 983-7598 J. Mescher   |  |   |  |                       | A. State Manifest Document Number<br>89733557  |   |                                  |
| 5. Transporter 1 Company Name<br>Pacific Environmental Mgmt Corp   |  |   |  |                       | B. State Generator's ID<br>HAHQ364038070   |   |                                  |
| 6. US EPA ID Number<br>CA0982053779  |  |   |  |                       | C. State Transporter's ID<br>104084  |   |                                  |
| 7. Transporter 2 Company Name  |  |   |  |                       | D. Transporter's Phone<br>(213) 324-2445   |   |                                  |
| 8. US EPA ID Number  |  |   |  |                       | E. State Transporter's ID  |   |                                  |
| 9. Designated Facility Name and Site Address<br>Chem-Tech Systems Inc.<br>3640 E. 26th St.<br>Vernon, CA 90023   |  |   |  |                       | F. Transporter's Phone   |   |                                  |
| 10. US EPA ID Number<br>CAT080033681   |  |   |  |                       | G. State Facility's ID   |   |                                  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)<br>Non RCRA Hazardous Waste Liquid<br>(Contaminated Groundwater)  |  |   |  |                       | 12. Containers<br>No. Type   | 13. Total Quantity<br>Unit                                      | 14. Waste No.<br>State EPA/Other |
|  |  |   |  |                       | 1  | 4500 G  | 343<br>N/A                       |
|  |  |   |  |                       |  |   |                                  |
|  |  |   |  |                       |  |   |                                  |
|  |  |   |  |                       |  |   |                                  |
| J. Additional Descriptions for Materials Listed Above<br>Groundwater 99-100 %<br>Solvents <.01%  |  |   |  |                       | K. Handling Codes for Wastes Listed Above<br>a. Profile # 110-116-12<br>b.<br>c.<br>d. |   |                                  |
| 15. Special Handling Instructions and Additional Information<br>24-Hour Emergency Phone # (213) 324-2445<br>Wear Appropriate Protection Gear   |  |   |  |                       |  |   |                                  |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |  |                       |  |   |                                  |
| Printed/Typed Name<br>* JEAN A MESCHER   |  |   |  | Signature             |  | Month Day Year<br>10/29/91                                      |                                  |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>J. MORRIS   |  |   |  | Signature             |  | Month Day Year<br>10/30/91                                      |                                  |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name  |  |   |  | Signature             |  | Month Day Year  |                                  |
| 19. Discrepancy Indication Space<br>MK085372   |  |   |  |                       |  |   |                                  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name  |  |   |  |                       |  |   |                                  |
| Signature  |  |   |  | Month Day Year        |  |   |                                  |

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89733560

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>C A D 0 6 0 3 9 5 7 5 3 | Manifest Document No.                                       | 2. Page 1 of 1                                       | Information in the shaded areas is not required by Federal law. |
|--|--|---|---|--|---|
| 3. Generator's Name and Mailing Address<br>McKesson Corporation<br>One Post St., 28th Floor, San Francisco, CA 94104   |  |   |   | A. State Manifest Document Number<br>89733560        |   |
| 4. Generator's Phone (415) 983-7598 J. Mescher   |  |   |   | B. State Generator's ID<br>H A H Q 3 6 7 0 3 8 9 7 0 |   |
| 5. Transporter 1 Company Name<br>Pacific Environmental Mgmt Corp   |  | 6. US EPA ID Number<br>C A D 9 8 2 0 5 3 7 7 9          |   | C. State Transporter's ID<br>109093                  |   |
| 7. Transporter 2 Company Name  |  | 8. US EPA ID Number                                     |   | D. Transporter's Phone (213) 324-2445                |   |
| 9. Designated Facility Name and Site Address<br>Oil Process Company<br>5756 Alba St.<br>Los Angeles, CA 90058  |  | 10. US EPA ID Number<br>C A D 0 5 0 8 0 6 8 5 0         |   | E. State Transporter's ID                            |   |
|  |  |   |   | F. Transporter's Phone                               |   |
|  |  |   |   | G. State Facility's ID                               |   |
|  |  |   |   | H. Facility's Phone (213) 585-5063                   |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)<br>Hazardous Waste Solid N.O.S.<br>ORM-E NA 9189<br>(Solvent Contaminated Soil)   |  |   | 12. Containers<br>No. Type<br>0106 Dm 37.00 P               | 13. Total Quantity                                   | 14. Unit<br>Wt/Vol  |
|  |  |   |   |  | I. Waste No.<br>State 611<br>EPA/Other See Sec. J               |
|  |  |   |   |  | State   |
|  |  |   |   |  | EPA/Other   |
|  |  |   |   |  | State   |
|  |  |   |   |  | EPA/Other   |
|  |  |   |   |  | State   |
|  |  |   |   |  | EPA/Other   |
| J. Additional Descriptions for Materials Listed Above<br>Soil 99-100% Approval # OP10714-31<br>EPA Codes: U211, U165, U225, U077, U210, U220, U239, U228, U080.  |  |   | K. Handling Codes for Wastes Listed Above<br>a. b.<br>c. d. |  |   |
| 15. Special Handling Instructions and Additional Information<br>24-Hour Emergency Phone # (213) 324-2445<br>Wear Appropriate Protection Gear<br>ERG #31  |  |   |   |  |   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |   |  |   |
| Printed/Typed Name<br>JEAN A MESCHER   |  | Signature<br><i>[Signature]</i>                         |   | Month Day Year<br>03 01 91                           |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name<br>J.T. Morris                       |   | Signature<br><i>[Signature]</i>                      |   |
|  |  | Month Day Year<br>02 06 91                              |   |  |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name                                      |   | Signature  |   |
|  |  | Month Day Year  |   |  |   |
| 19. Discrepancy Indication Space<br>MK085371   |  |   |   |  |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |   |   |  |   |
| Printed/Typed Name   |  | Signature   |   | Month Day Year                                       |   |

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89733567  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802, WITHIN CALIFORNIA CALL 1-800-852-7650

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>C A D 0 6 0 3 9 5 7 5 3 0 0 0 1 |  | Manifest Document No.<br>0 0 0 1 0 1 |  | 2. Page 1 of 1   |  | Information in the shaded areas is not required by Federal law |  |                                |  |   |  |                                      |  |                |  |                |  |
|--|--|---|--|--------------------------------------|--|--|--|--|--|--------------------------------|--|---|--|--------------------------------------|--|----------------|--|----------------|--|
| 3. Generator's Name and Mailing Address<br><b>McKesson Corporation</b><br><b>One Post St., 28th Floor, San Francisco, CA 94104</b>   |  |   |  |                                      |  | A. State Manifest Document Number<br><b>89733567</b>     |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 4. Generator's Phone ( <b>415</b> ) <b>983-7598</b> <b>J. Mescher</b>  |  |   |  |                                      |  | B. State Generator's ID<br><b>HAHQ36-038070</b>          |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 5. Transporter 1 Company Name<br><b>Pacific Environmental Mgmt Corp</b>  |  |   |  |                                      |  | C. State Transporter's ID<br><b>104078</b>               |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 6. US EPA ID Number<br>C A D 9 8 2 0 5 3 7 7 9   |  |   |  |                                      |  | D. Transporter's Phone ( <b>213</b> ) <b>324-2445</b>    |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 7. Transporter 2 Company Name  |  |   |  |                                      |  | E. State Transporter's ID                                |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 8. US EPA ID Number  |  |   |  |                                      |  | F. Transporter's Phone                                   |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 9. Designated Facility Name and Site Address<br><b>Chemical Waste Management</b><br><b>35251 Old Skyline Rd.</b><br><b>Kettleman City, CA 93239</b>  |  |   |  |                                      |  | G. State Facility's ID                                   |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 10. US EPA ID Number<br>C A T 0 0 0 6 4 6 1 1 7  |  |   |  |                                      |  | H. Facility's Phone<br><b>(800) 222-2964</b>             |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)<br><b>Hazardous Waste Solid N.O.S.</b><br><b>ORM-E NA 9189</b><br><b>(Solvent Contaminated Soil)</b>  |  |   |  |                                      |  | 12. Containers<br>No. Type<br><b>11 DT</b>               |  | 13. Total Quantity<br><b>122 Y</b>                             |  | 14. Unit<br>Wt/Vol<br><b>Y</b> |  |   |  |                                      |  |                |  |                |  |
| J. Additional Descriptions for Materials Listed Above<br><b>Soil 99-100%</b><br><b>EPA Codes: U211, U165, U225, U077, U210, U220, U239, U228, U080.</b><br><b>Profile #K94163</b>  |  |   |  |                                      |  | 15. State Waste No.<br><b>611</b>                        |  | EPA/Other<br><b>See Sec. J</b>                                 |  | State                          |  |   |  |                                      |  |                |  |                |  |
|  |  |   |  |                                      |  | EPA/Other  |  | State  |  |                                |  |   |  |                                      |  |                |  |                |  |
|  |  |   |  |                                      |  | EPA/Other  |  | State  |  |                                |  |   |  |                                      |  |                |  |                |  |
|  |  |   |  |                                      |  | EPA/Other  |  | State  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 15. Special Handling Instructions and Additional Information<br><b>24-Hour Emergency Phone # (213) 324-2445</b><br><b>Wear Appropriate Protection Gear</b><br><b>ERG #31</b>   |  |   |  |                                      |  | K. Handling Codes for Wastes Listed Above<br>a. b. c. d. |  |  |  |                                |  |   |  |                                      |  |                |  |                |  |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |  |                                      |  | Printed/Typed Name<br><b>JEAN A MESCHER</b>              |  |  |  |                                |  | Signature<br><i>[Signature]</i>   |  | Month Day Year<br><b>03 01 91</b>    |  |                |  |                |  |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  |   |  |                                      |  | Printed/Typed Name<br><b>J.T. Morris</b>                 |  |  |  |                                |  | Signature<br><i>[Signature]</i>   |  | Month Day Year<br><b>10 20 19 91</b> |  |                |  |                |  |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  |   |  |                                      |  | Printed/Typed Name                                       |  |  |  |                                |  | Signature   |  | Month Day Year                       |  |                |  |                |  |
| 19. Discrepancy Indication Space   |  |   |  |                                      |  | <b>MK085370</b>  |  |  |  |                                |  | 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. |  | Printed/Typed Name                   |  | Signature      |  | Month Day Year |  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |   |  |                                      |  |  |  |  |  |                                |  | Printed/Typed Name  |  | Signature                            |  | Month Day Year |  |                |  |

State of California—Health and Welfare Agency  
Form Approved OAS No. 2090-0037 (Expires 9-30-91)  
Please print or type. Form designed for use on site (12-point typewriter).

See Instructions on Back of Page 6  
and Front of Page 7

Department of Health Services  
Toxic Substances Control Division  
Sacramento, California

|  |  |   |  |   |  |   |  |
|--|--|---|--|---|--|---|--|
| <b>UNIFORM HAZARDOUS WASTE MANIFEST</b>  |  | 1. Generator's US EPA ID No.<br>CA100610317157513916912 |  | 2. Page 1 of 1  |  | Information in the shaded areas is not required by Federal law. |  |
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>9005 SORANCON AVE. SANTA FE SPRINGS, CA<br>4. Generator's Phone (415) 983-8671  |  |   |  | A. State Manifest Document Number<br>90441692   |  |   |  |
| 5. Transporter 1 Company Name<br>LAWLAW ENVIRONMENTAL  |  |   |  | B. State Generator's ID<br>HAWAII   |  |   |  |
| 6. US EPA ID Number<br>CA101012916151418914  |  |   |  | C. State Transporter's ID<br>213-518-4700   |  |   |  |
| 7. Transporter 2 Company Name  |  |   |  | D. Transporter's Phone<br>11003   |  |   |  |
| 8. US EPA ID Number  |  |   |  | E. State Transporter's ID   |  |   |  |
| 9. Designated Facility Name and Site Address<br>PRC<br>1835 E. 29TH ST.<br>SIGNAL HILL, CA 90806   |  |   |  | F. Transporter's Phone  |  |   |  |
| 10. US EPA ID Number<br>CA1010181011101519   |  |   |  | G. State Facility's ID  |  |   |  |
| 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)<br>a. NON-RCRA REGULATED<br>HAZARDOUS WASTE, LIQUID   |  |   |  | 12. Containers<br>No. Type<br>0101 TIT 034010 G   |  | 13. Total Quantity<br>14. UN 1911 Vol                           |  |
| 15. Additional Descriptions for Materials Listed Above<br>WATER ACCUMULATED IN WASTE<br>PREVIOUSLY CONTAINING SOLVENTS<br>PRC RELEASE # 0705   |  |   |  | 16. Handling Codes for Wastes Listed Above<br>01  |  | 17. Waste No.<br>241  |  |
| 18. Special Handling Instructions and Additional Information<br>WEAR GLOVES & GOGGLES Pp# 010807<br>IN CASE OF EMERGENCY CALL: 1-800-334-0004 RES L.A. REGION  |  |   |  | 19. Date<br>11 72 JAN 8   |  | 20. EPA/Other   |  |
| <p>GENERATOR'S CERTIFICATION: I hereby declare that the contents of this assignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.</p> <p>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.</p> |  |   |  |   |  |   |  |
| Printed/Typed Name<br>Michael J Rosenberg  |  |   |  | Signature<br>Michael J Rosenberg  |  | Month Day Year<br>11 13 91                                      |  |
| 17. Transporter 1 Acknowledgment of Receipt of Materials   |  |   |  | 18. Transporter 2 Acknowledgment of Receipt of Materials  |  | 19. Date<br>11 13 91  |  |
| Printed/Typed Name<br>DAVID ESPINOZA   |  |   |  | Signature<br>David Espinoza   |  | Month Day Year<br>11 13 91                                      |  |
| 19. Discrepancy Indication Space<br>MKMR00264  |  |   |  | 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 18. |  |   |  |
| Printed/Typed Name<br>JOSE L. LAUTENAU   |  |   |  | Signature<br>Jose L. Lautenau   |  | Month Day Year<br>10 11 91                                      |  |

0022 A  
5188-22

9-89) Previous editions are obsolete.

Do Not Write Below This Line

While TRF SENDS THIS COPY TO DHS WITHIN 30 DAYS

MKIL058456

Please print or type. Form designed for use on elite (12-pitch typewriter).

90441692  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-862-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>K1A1D10101319151701341161912 |  | Manifest Document No.<br>1 of 1                          | 2. Page 1<br>Information in the shaded areas is not required by Federal law. |  |
|--|--|--|--|--|--|--|
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>5005 SORENSON AVE. SANTA FE SPRINGS, CA<br>4. Generator's Phone (415) 723-2671  |  |  |  | A. State Manifest Document Number<br>90441692            |  |  |
| 5. Transporter 1 Company Name<br>LAIDLAW ENVIRONMENTAL   |  |  |  | B. State Generator's ID<br>H1A1M101319151701341161912    |  |  |
| 6. US EPA ID Number<br>K1A1D10101319151701341161912  |  |  |  | C. State Transporter's ID<br>213-518-4700                |  |  |
| 7. Transporter 2 Company Name  |  |  |  | D. Transporter's Phone<br>11008                          |  |  |
| 8. US EPA ID Number  |  |  |  | E. State Transporter's ID                                |  |  |
| 9. Designated Facility Name and Site Address<br>PRC<br>1835 E. 27TH ST.<br>SIGNAL HILL, CA 90406   |  |  |  | F. Transporter's Phone                                   |  |  |
| 10. US EPA ID Number   |  |  |  | G. State Facility's ID                                   |  |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  |  | H. Facility's Phone<br>213-555-7431                      |  |  |
| a. NON-RCRA REGULATED<br>HAZARDOUS WASTE LIQUID  |  |  |  | 12. Containers<br>No. Type                               | 13. Total Quantity   | 14. Unit<br>Wt/Vol                     |
| b.   |  |  |  |  |  | I. Waste No.<br>State 241<br>EPA/Other |
| c.   |  |  |  |  |  | State<br>EPA/Other                     |
| d.   |  |  |  |  |  | State<br>EPA/Other                     |
| J. Additional Descriptions for Materials Listed Above<br>WATER ACCUMULATED IN CIST'S<br>PREVIOUSLY CONTAINING SOLVENTS<br>PRC RELEASE #10705   |  |  |  | K. Handling Codes for Wastes Listed Above<br>a. b. c. d. |  |  |
| 15. Special Handling Instructions and Additional Information<br>WEAR GLOVES & GOGGLES<br>IN CASE OF EMERGENCY CALL 1-800-334-0004 RFS L.A. REGION  |  |  |  |  |  |  |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |  |  |  |
| Printed/Typed Name<br>Michael J Rosenberg  |  | Signature<br><i>Michael J Rosenberg</i>                      |  | Month Day Year<br>01/02/91                               |  |  |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name<br>DAVID ESPINOZA                         |  | Signature<br><i>David Espinoza</i>                       |  | Month Day Year<br>10/10/88             |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name   |  | Signature  |  | Month Day Year                         |
| 19. Discrepancy Indication Space<br>MKMR00250  |  |  |  |  |  |  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |  |  |  |  |  |
| Printed/Typed Name   |  | Signature  |  | Month Day Year   |  |  |

# UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest  
Document No.

2. Page 1  
of 1

Information in the shaded areas  
is not required by Federal law.

3. Generator's Name and Mailing Address

A. State Manifest Document Number

90441692

4. Generator's Phone ( )

B. State Generator's ID

C. State Transporter's ID

5. Transporter 1 Company Name

6. US EPA ID Number

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers  
No. Type

13. Total  
Quantity

14. Unit  
Wt/Vol

15. Waste No.

a.

b.

c.

d.

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

a.

b.

15. Special Handling Instructions and Additional Information

16.

**GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Signature

Month Day Year

Michael J. Rosenberg

[Signature]

01/02/91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

[Signature]

[Signature]

01/02/91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

MKMR00257

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7693

Please print or type. Form designed for use on site (12-pitch typewriter).

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.   | Manifest Document No. | 2. Page 1 of 1                                       | Information in the shaded areas is not required by Federal law. |
|--|--|--|-----------------------|--|---|
| 3. Generator's Name and Mailing Address<br><b>MCKESSON CORPORATION</b><br><b>9005 EDENSON AVE, SANTA FE SPRINGS, CA</b>  |  | 4. Generator's Phone (415) 983-8671  |                       | A. State Manifest Document Number<br><b>90441693</b> |   |
| 5. Transporter 1 Company Name<br><b>LATOLAW ENVIRONMENTAL</b>  |  | 6. US EPA ID Number<br><b>CA10101291615418914</b>  |                       | B. State Generator's ID<br><b>6038970</b>            |   |
| 7. Transporter 2 Company Name  |  | 8. US EPA ID Number  |                       | C. State Transporter's ID<br><b>213-518-4700</b>     |   |
| 9. Designated Facility Name and Site Address<br><b>PRC</b><br><b>1835 E. 29TH ST.</b><br><b>SIGNAL HILL, CA 90806</b>  |  | 10. US EPA ID Number<br><b>CA10101010110159</b>  |                       | D. State Facility's ID<br><b>213-595-7431</b>        |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  | 12. Containers<br>No.  | Type                  | 13. Total Quantity                                   | 14. Unit<br>Wt/Vol  |
| a. <b>NON-RCRA REGULATED</b><br><b>HAZARDOUS WASTE, LIQUID</b>   |  | 0101   | TIT                   | 05010106   | State<br><b>241</b><br>EPA/Other                                |
| b.   |  |  |                       |  | State<br>EPA/Other  |
| c.   |  |  |                       |  | State<br>EPA/Other  |
| d.   |  |  |                       |  | State<br>EPA/Other  |
| J. Additional Descriptions for Materials Listed Above<br><b>WATER ACCUMULATED IN UST'S</b><br><b>PREVIOUSLY CONTAINING SOLVENTS</b>  |  | K. Handling Codes for Wastes Listed Above<br>a. <b>01</b><br>b.<br>c.<br>d. <b>15 2E</b> |                       |  |   |
| 15. Special Handling Instructions and Additional Information<br><b>WEAR GLOVES &amp; BOOTS</b><br><b>IN CASE OF EMERGENCY CALL: 1-800-354-0004 RES. LA. REG. 1736</b>  |  |  |                       |  |   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |                       |  |   |
| Printed/Typed Name<br><b>Michael J Rosenberg</b>   |  | Signature<br><i>Michael J Rosenberg</i>  |                       | Month Day Year<br><b>01/02/91</b>                    |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br><b>ONAIL CARTER</b>   |  | Signature<br><i>Onail Carter</i>   |                       | Month Day Year<br><b>10/10/49</b>                    |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name  |  | Signature  |                       | Month Day Year                                       |   |
| 19. Discrepancy Indication Space<br><b>MKMR00265</b>   |  |  |                       |  |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.<br>Printed/Typed Name<br><b>MARIO FERNANDEZ</b>  |  |  |                       |  |   |
| Signature<br><i>Mario Fernandez</i>  |  | Month Day Year<br><b>10/10/49</b>  |                       |  |   |

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7660

90441693  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8902; WITHIN CALIFORNIA CALL 1-800-852-7550  
GENERATOR  
TRANSPORTER  
FACILITY

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.                             | Manifest Document No. | 2. Page 1                                     | Information in the shaded areas is not required by Federal law. |                               |
|--|--|--|-----------------------|---|---|-------------------------------|
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>9005 SORENSON AVE, SANTA FE SPRINGS, CA   |  | CIA9261037915175341161913                                |                       | A. State Manifest Document Number<br>90441533 |   |                               |
| 4. Generator's Phone (415) 933-3671  |  | 90670  |                       | B. State Generator's ID<br>H1A14136638079     |   |                               |
| 5. Transporter 1 Company Name<br>CALIFORNIA ENVIRONMENTAL  |  | 6. US EPA ID Number<br>CIA0102191651418914               |                       | C. State Transporter's ID                     |   |                               |
| 7. Transporter 2 Company Name  |  | 8. US EPA ID Number                                      |                       | D. Transporter's Phone<br>213-518-4700        |   |                               |
| 9. Designated Facility Name and Site Address<br>PRC<br>1335 E. 27TH ST.<br>SIGNAL HILL, CA 90806   |  | 10. US EPA ID Number<br>CIA101810101110159               |                       | E. State Transporter's ID<br>111011           |   |                               |
|  |  |  |                       | F. Transporter's Phone                        |   |                               |
|  |  |  |                       | G. State Facility's ID                        |   |                               |
|  |  |  |                       | H. Facility's Phone<br>213-595-7431           |   |                               |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  | 12. Containers<br>No.                                    | Type                  | 13. Total Quantity                            | 14. Unit<br>Wt/Vol  | 1. Waste No.                  |
| a. NON-RCRA REGULATED<br>HAZARDOUS WASTE LIQUID  |  | 0101   | TIT                   | 0501010                                       | 6   | State<br>241<br>EPA/Other     |
| b.   |  |  |                       |   |   | State<br>EPA/Other            |
| c.   |  |  |                       |   |   | State<br>EPA/Other            |
| d.   |  |  |                       |   |   | State<br>EPA/Other            |
| J. Additional Descriptions for Materials Listed Above<br>WATER ACCUMULATED IN UST'S<br>PREVIOUSLY CONTAINING SOLVENTS  |  | K. Handling Codes for Wastes Listed Above<br>a. b. c. d. |                       |   |   |                               |
| 15. Special Handling Instructions and Additional Information<br>WEAR GLOVES & GOGGLES<br>IN CASE OF EMERGENCY CALL: 1-800-334-0004 RES LA. REGION  |  |  |                       |   |   |                               |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |                       |   |   |                               |
| Printed/Typed Name<br>Michael J Rosenberg  |  | Signature<br>Michael J Rosenberg                         |                       | Month Day Year<br>01/02/91                    |   |                               |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name<br>O'NEIL CARTER                      |                       | Signature<br>O'Neil Carter                    |   | Month Day Year<br>10/11/14/91 |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name                                       |                       | Signature                                     |   | Month Day Year                |
| 19. Discrepancy Indication Space   |  | MKMR00251  |                       |   |   |                               |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |  |                       |   |   |                               |
| Printed/Typed Name   |  | Signature  |                       | Month Day Year                                |   |                               |

Please print or type. Form designed for use on elite (12-pitch typewriter).

90441693

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.                  | Manifest Document No. | 2. Page 1 of 1                     | Information in the shaded areas is not required by Federal law. |
|--|--|---|-----------------------|------------------------------------|---|
| 3. Generator's Name and Mailing Address<br>ATLANTIC COAST CORPORATION<br>1015 LORRAINE AVE, SAN ANTONIO, TX 78201  |  | A. State Manifest Document Number<br>90441693 |                       | B. State Generator's ID<br>6018879 |   |
| 4. Generator's Phone (915) 754-1174  |  | C. State Transporter's ID<br>10184700         |                       | D. Transporter's ID<br>10184700    |   |
| 5. Transporter 1 Company Name<br>LAWSON ENVIRONMENTAL CORPORATION  |  | E. State Transporter's ID<br>10184700         |                       | F. Transporter's Phone             |   |
| 6. US EPA ID Number  |  | G. State Facility's ID                        |                       | H. Facility's Name                 |   |
| 7. Transporter 2 Company Name  |  | I. State Facility's ID                        |                       | J. Facility's Name                 |   |
| 8. US EPA ID Number  |  | K. Handling Codes for Wastes Listed Above     |                       | L. Facility's Phone                |   |
| 9. Designated Facility Name and Site Address<br>PCC<br>1111 S. MAIN ST.<br>1111 S. MAIN ST. LA BORDA, CA 94042   |  | 10. US EPA ID Number                          |                       | M. Facility's Phone                |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  | 12. Containers No.                            | Type                  | 13. Total Quantity                 | 14. Unit Wt/Vol   |
| a. UN 2811 ACIDIC LIQUID   |  |   |                       |                                    |   |
| b. HAZARDOUS WASTE LIQUID  |  |   |                       |                                    |   |
| c.   |  |   |                       |                                    |   |
| d.   |  |   |                       |                                    |   |
| J. Additional Descriptions for Materials Listed Above<br>DANGER ACIDIC LIQUID TOXIC<br>CORROSIVE CONTAINING SOLVENTS   |  | K. Handling Codes for Wastes Listed Above     |                       |                                    |   |
| 15. Special Handling Instructions and Additional Information<br>ALL WASTE IS TO BE TREATED AND DISPOSED IN A MANNER THAT IS IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS  |  |   |                       |                                    |   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |                       |                                    |   |
| Printed/Typed Name<br>Michael J Rosenberg  |  | Signature<br>Michael J Rosenberg              |                       | Month Day Year<br>11/02/91         |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>ONIL CARTER   |  | Signature<br>Onil Carter                      |                       | Month Day Year<br>10/10/91         |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name  |  | Signature                                     |                       | Month Day Year                     |   |
| 19. Discrepancy Indication Space<br>MKMR00258  |  |   |                       |                                    |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name  |  |   |                       |                                    |   |
| Signature  |  |   |                       |                                    |   |
| Month Day Year   |  |   |                       |                                    |   |

State of California—Health and Welfare Agency  
Form approved Under No. 2000-0000 (Expires 9-30-91)

Please print or type. Form designed for use on site (12-pitch typewriter).

See Instructions on Back of Page 6  
and Front of Page 7

Department of Health Services  
Toxic Substances Control Division  
Sacramento, California

|  |  |  |  |   |  |   |  |   |  |
|--|--|--|--|---|--|---|--|---|--|
| <b>UNIFORM HAZARDOUS WASTE MANIFEST</b>  |  | 1. Generator's US EPA ID No.<br>CA 01960395753/9171654 |  | Manifest Number<br>1 of 1                         |  | 9. Date 1<br>1/1                          |  | Information in the shaded areas is not required by Federal law. |  |
| 2. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>9005 SORENSON AVE. SANTA L. SMITHS, CA<br>4. Generator's Phone (715) 983-8671 90670   |  |  |  | A. State Manifest Document Number<br>90441694     |  | B. State Generator's ID<br>6038070        |  | HAWAII 312323   |  |
| 5. Transporter 1 Company Name<br>LATOLAW ENVIRONMENTAL   |  |  |  | 6. US EPA ID Number<br>CA 012916548914            |  | C. State Transporter's ID<br>213-518-9700 |  | D. Transporter's Phone<br>111 801                               |  |
| 7. Transporter 2 Company Name  |  |  |  | 8. US EPA ID Number                               |  | E. State Transporter's ID                 |  | F. Transporter's Phone  |  |
| 8. Designated Facility Name and Site Address<br>PRC<br>1835 E. 25TH ST<br>SIGNAL HILL, CA 90806  |  |  |  | 10. US EPA ID Number<br>CA 01081001110519         |  | G. State Facility's ID                    |  | H. Facility's Phone<br>213-595-7431                             |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  |  | 12. Containers<br>No. Type                        |  | 13. Total Quantity                        |  | 14. Unit Wt/Vol   |  |
| a. NON-RCRA REGULATED<br>HAZARDOUS WASTE, LIQUID   |  |  |  | 0101 TIT0510010                                   |  | 6   |  | L<br>State No.<br>241   |  |
| b.   |  |  |  |   |  |   |  | EPA/Other   |  |
| c.   |  |  |  |   |  |   |  | State   |  |
| d.   |  |  |  |   |  |   |  | EPA/Other   |  |
| 1. Additional Descriptions for Materials Listed Above<br>WATER ACCUMULATED IN USED PREVIOUSLY<br>CONTAINING SOLVENTS<br>PRC RELEASE # 010705   |  |  |  | K. Handling Codes for Wastes Listed Above<br>R 01 |  | 14 38 JAN 8                               |  |   |  |
| 15. Special Handling Instructions and Additional Information<br>GLOVES & BOGGLES # 010807<br>IN CASE OF EMERGENCY CALL: 1-800-354-0004 RES LA REJAN  |  |  |  |   |  | 14 58                                     |  |   |  |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this manifest are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international, national, and state regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |   |  |   |  |   |  |
| Printed/Typed Name<br>Michael J Rosenberg  |  |  |  | Signature<br>Michael J Rosenberg                  |  |   |  | Month Day Year<br>01/02/91                                      |  |
| 17. Transporter 1 Acknowledgment of Receipt of Materials<br>Printed/Typed Name<br>KEN REYNOLDS   |  |  |  | Signature<br>Ken Reynolds                         |  |   |  | Month Day Year<br>01/04/91                                      |  |
| 18. Transporter 2 Acknowledgment of Receipt of Materials<br>Printed/Typed Name   |  |  |  | Signature   |  |   |  | Month Day Year  |  |
| 19. Discrepancy Indication Space   |  |  |  |   |  |   |  |   |  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 16.  |  |  |  |   |  |   |  |   |  |
| Printed/Typed Name<br>MARIO FERNANDEZ  |  |  |  | Signature<br>Mario Fernandez                      |  |   |  | Month Day Year<br>01/08/91                                      |  |

1. 0000 A  
1. 0000 B

Do Not Write Below This Line

MKMR00266

TOTAL P.03

MKIL058458

90441694  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.  | Manifest Document No. | 2. Page 1 of 1                                | Information in the shaded areas is not required by Federal law. |
|--|--|---|-----------------------|---|---|
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>9005 SORENSON AVE. SANTA FE SPRINGS, CA<br>4. Generator's Phone (714) 983-3671 90670  |  | 5. Transporter 1 Company Name<br>LAIN LAW ENVIRONMENTAL KID 01219161514 |                       | 6. State Manifest Document Number<br>90441694 |   |
| 6. US EPA ID Number  |  | 7. Transporter 2 Company Name   |                       | 8. US EPA ID Number                           |   |
| 9. Designated Facility Name and Site Address<br>PRC<br>1835 E. 29TH ST<br>SIGNAL HILL, CA 90806 01A170181001/1101519   |  | 10. US EPA ID Number  |                       | 11. State Generator's ID<br>H1A1A0131 6038029 |   |
| 12. Containers<br>No. Type   |  | 13. Total Quantity  |                       | 14. Unit Wt/Vol                               |   |
| a. NON-RCRA REGULATED<br>HAZARDOUS WASTE, LIQUID 01011 TIT 015101010 6   |  | 15. State   |                       | 16. EPA/Other                                 |   |
| b.   |  | 17. State   |                       | 18. EPA/Other                                 |   |
| c.   |  | 19. State   |                       | 20. EPA/Other                                 |   |
| d.   |  | 21. State   |                       | 22. EPA/Other                                 |   |
| J. Additional Descriptions for Materials Listed Above<br>WATER ACCUMULATED IN USE PREVIOUSLY<br>CONTAINING SOLVENTS<br>PRC RELEASE # 010705  |  | K. Handling Codes for Wastes Listed Above<br>a. b. c. d.                |                       |   |   |
| 15. Special Handling Instructions and Additional Information<br>WEAR GLOVES & GOGGLES<br>IN CASE OF EMERGENCY CALL 1-800-334-0004 RES. W. 2-6-100  |  |   |                       |   |   |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |                       |   |   |
| Printed/Typed Name<br>Michael J Rosenberg  |  | Signature<br>Michael J Rosenberg  |                       | Month Day Year<br>01/02/91                    |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>KEN REYNOLDS  |  | Signature<br>Ken Reynolds   |                       | Month Day Year<br>01/04/91                    |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name  |  | Signature   |                       | Month Day Year                                |   |
| 19. Discrepancy Indication Space<br>MKMR00252  |  |   |                       |   |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name Signature Month Day Year   |  |   |                       |   |   |

**UNIFORM HAZARDOUS  
WASTE MANIFEST**

1. Generator's US EPA ID No.

Manifest  
Document No.

2. Page 1

Information in the shaded areas  
is not required by Federal law.

3. Generator's Name and Mailing Address

CHLORALON CORPORATION

4. Generator's Phone ( ) - -

6. US EPA ID Number

5. Transporter 1 Company Name

8. US EPA ID Number

7. Transporter 2 Company Name

9. Designated Facility Name and Site Address

10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers  
No. Type

13. Total  
Quantity

14. Unit  
Wt/Vol

15. Waste No.

a.

b.

c.

d.

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16.

**GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Signature

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

MKMR00259

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Month Day Year

90441694  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-952-7550

GENERATOR

TRANSPORTER

FACILITY

Please print or type. Form designed for use on elite (12-pitch typewriter).

90441695  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7650

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No. <u>345753</u><br><u>CA1D01610131741</u> |  | Manifest Document No. <u>41161715</u>   | 2. Page 1 of 1  | Information in the shaded areas is not required by Federal law. |                 |
|--|--|--|--|---|---|---|-----------------|
| 3. Generator's Name and Mailing Address<br><u>MCKESSON CORPORATION</u><br><u>9005 SORRENSEN AVE. SANTA FE SPRINGS, CA</u><br>4. Generator's Phone <u>(415) 933-8671</u> <u>90670</u>   |  |  |  |   | A. State Manifest Document Number<br><u>90441695</u>              |   |                 |
| 5. Transporter 1 Company Name<br><u>LADLAN ENVIRONMENTAL</u> <u>CA1D012916154181914</u>  |  |  |  |   | B. State Generator's ID<br><u>H1A1H01312</u>                      |   |                 |
| 7. Transporter 2 Company Name  |  |  |  |   | C. State Transporter's ID<br><u>111010</u>                        |   |                 |
| 8. US EPA ID Number  |  |  |  |   | D. Transporter's Phone<br><u>213-512-4730</u>                     |   |                 |
| 9. Designated Facility Name and Site Address<br><u>PRC</u><br><u>1835 E. 29TH ST</u><br><u>SIGNAL HILL, CA 90806</u> <u>CA1F01801011110159</u>   |  |  |  |   | E. State Transporter's ID   |   |                 |
| 10. US EPA ID Number   |  |  |  |   | F. Transporter's Phone  |   |                 |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  |  |   | G. State Facility's ID  |   |                 |
| a. <u>NON-RCRA REGULATED</u><br><u>HAZARDOUS WASTE, LIQUID</u><br>b.<br>c.<br>d.   |  |  |  |   | 12. Containers  | 13. Total Quantity  | 14. Unit Wt/Vol |
|  |  |  |  |   | No.   | Type  |                 |
|  |  |  |  |   | I. Waste No.  |   |                 |
|  |  |  |  |   | State <u>241</u><br>EPA/Other                                     |   |                 |
| J. Additional Descriptions for Materials Listed Above<br><u>WATER ACCUMULATED IN "USTS" PREVIOUSLY CONTAINING SOLVENTS</u>   |  |  |  |   | K. Handling Codes for Wastes Listed Above<br>a.<br>b.<br>c.<br>d. |   |                 |
| 15. Special Handling Instructions and Additional Information<br><u>WEAR GLOVES &amp; GOGGLES</u><br><u>IN CASE OF EMERGENCY CALL 1-800-334-0004</u> <u>RES</u> <u>CA REGION</u>  |  |  |  |   |   |   |                 |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |   |   |   |                 |
| Printed/Typed Name<br><u>Michael J Rosenberg</u>   |  |  |  | Signature<br><u>Michael J Rosenberg</u> |   | Month Day Year<br><u>01/02/91</u>                               |                 |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  |  |  | Signature<br><u>Lloyd S Reed</u>        |   | Month Day Year<br><u>01/04/91</u>                               |                 |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  |  |  | Signature                               |   | Month Day Year  |                 |
| 19. Discrepancy Indication Space<br><div style="text-align: right; font-weight: bold;">MKMR00253</div>   |  |  |  |   |   |   |                 |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |  |  |   |   |   |                 |
| Printed/Typed Name   |  |  |  | Signature                               |   | Month Day Year  |                 |

Please print or type. Form designed for use on 8 1/2" x 11" (12-pitch typewriter).

90441695  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-9802; WITHIN CALIFORNIA CALL 1-800-862-7650

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No. <u>375753</u><br><u>CAVILKIOE</u> |  | Manifest Document No. <u>1711K115</u> | 2. Page 1 of 1                                       | Information in the shaded areas is not required by Federal law. |                                   |
|--|--|--|--|---------------------------------------|--|---|-----------------------------------|
| 3. Generator's Name and Mailing Address<br><u>MCKENSON CORPORATION</u><br><u>1000 PENNSYLVANIA AVE. SUITE 100</u><br><u>MINNIS CA 9470</u>   |  |  |  |                                       | A. State Manifest Document Number<br><u>90441695</u> |   |                                   |
| 4. Generator's Phone <u>(415) 123-4567</u>   |  |  |  |                                       | B. State Generator's ID<br><u>11111111</u>           |   |                                   |
| 5. Transporter 1 Company Name<br><u>ENVIRONMENTAL RESPONSE</u>   |  |  |  |                                       | C. State Transporter's ID<br><u>111111</u>           |   |                                   |
| 6. US EPA ID Number<br><u>11111111</u>   |  |  |  |                                       | D. Transporter's Phone<br><u>212-545-7431</u>        |   |                                   |
| 7. Transporter 2 Company Name  |  |  |  |                                       | E. State Transporter's ID                            |   |                                   |
| 8. US EPA ID Number  |  |  |  |                                       | F. Transporter's Phone                               |   |                                   |
| 9. Designated Facility Name and Site Address<br><u>PRC</u><br><u>1-55 C. 2111 ST</u><br><u>NAL HILL A 90306 RAYMOND CA 94583</u>   |  |  |  |                                       | G. State Facility's ID                               |   |                                   |
| 10. US EPA ID Number   |  |  |  |                                       | H. Facility's Phone                                  |   |                                   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  |  |                                       | 12. Containers No.                                   | 13. Total Quantity  | 14. Unit Wt/Vol                   |
| a. <u>241</u>  |  |  |  |                                       |  |   |                                   |
| b. <u>OPU 116000</u>   |  |  |  |                                       |  |   |                                   |
| c.   |  |  |  |                                       |  |   |                                   |
| d.   |  |  |  |                                       |  |   |                                   |
| J. Additional Descriptions for Materials Listed Above<br><u>UNREACTED IN THIS PROPOSED</u><br><u>DISPOSAL</u>  |  |  |  |                                       | K. Handling Codes for Wastes Listed Above            |   |                                   |
| 15. Special Handling Instructions and Additional Information<br><u>NO SPECIAL HANDLING INSTRUCTIONS</u>  |  |  |  |                                       |  |   |                                   |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br><br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |                                       |  |   |                                   |
| Printed/Typed Name<br><u>Michael J Rosenberg</u>   |  |  |  |                                       | Signature<br><u>[Signature]</u>                      |   | Month Day Year<br><u>01/02/91</u> |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  |  |  |                                       |  |   |                                   |
| Printed/Typed Name<br><u>Lloyd Stead</u>   |  |  |  |                                       | Signature<br><u>[Signature]</u>                      |   | Month Day Year<br><u>01/09/91</u> |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  |  |  |                                       |  |   |                                   |
| Printed/Typed Name   |  |  |  |                                       | Signature  |   | Month Day Year                    |
| 19. Discrepancy Indication Space   |  |  |  |                                       |  |   |                                   |
| MKMR00260  |  |  |  |                                       |  |   |                                   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |  |  |                                       |  |   |                                   |
| Printed/Typed Name   |  |  |  |                                       | Signature  |   | Month Day Year                    |

90441695  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No. <u>315753</u><br><u>CA1001610031451</u> |  | Manifest Document No. <u>41161713</u>                  |  | 2. Page <u>1</u> of <u>1</u>                         |  | Information in the shaded areas is not required by Federal law. |  |
|--|--|--|--|--|--|--|--|---|--|
| 3. Generator's Name and Mailing Address<br><u>MCKESSON CORPORATION</u><br><u>9005 JENNIFER AVE. SUITE 200 PRINIS, CA</u>   |  |  |  |  |  | A. State Manifest Document Number<br><u>90441695</u> |  |   |  |
| 4. Generator's Phone <u>(415) 433-3671</u> <u>12670</u>  |  |  |  |  |  | B. State Generator's ID<br><u>H1A1M031233470</u>     |  |   |  |
| 5. Transporter 1 Company Name<br><u>LAIDLAW ENVIRONMENTAL</u>  |  |  |  |  |  | C. State Transporter's ID<br><u>111010</u>           |  |   |  |
| 6. US EPA ID Number<br><u>CA100129163418194</u>  |  |  |  |  |  | D. Transporter's Phone<br><u>213-584-4700</u>        |  |   |  |
| 7. Transporter 2 Company Name  |  |  |  |  |  | E. State Transporter's ID                            |  |   |  |
| 8. US EPA ID Number  |  |  |  |  |  | F. Transporter's Phone                               |  |   |  |
| 9. Designated Facility Name and Site Address<br><u>PRC</u><br><u>1535 E. 21st St</u><br><u>SUNOL HILL CA 90806</u>   |  |  |  |  |  | G. State Facility's ID<br><u>CA100180101110159</u>   |  |   |  |
| 10. US EPA ID Number   |  |  |  |  |  | H. Facility's Phone<br><u>213-545-7451</u>           |  |   |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  |  | 12. Containers   |  | 13. Total Quantity                                   |  | 14. Unit  |  |
|  |  |  |  | No. Type   |  | Quantity   |  | Wt/Vol  |  |
| a. <u>RECYCLING CERTIFICATE</u>  |  |  |  |  |  |  |  | Waste No.   |  |
| b. <u>PETROLEUM RECYCLING CORPORATION</u>  |  |  |  |  |  |  |  | State <u>241</u>  |  |
| c. <u>the above described waste(s) was specifically identified by reference to the waste manifest set forth above, was / were recycled in accordance with the provisions of 40CFR 261.6 and 261.11, except that 40CFR 261.3(c) (2) hazardous waste generated from the recycling efforts was also recycled in accordance with the provisions of 40CFR 266 Subpart D.</u>  |  |  |  |  |  |  |  | EPA/Other <u>1350</u>   |  |
| d. <u>PETROLEUM RECYCLING CORPORATION</u>  |  |  |  |  |  |  |  | State <u>241</u>  |  |
| J. Additional Descriptions for Materials Listed Above<br><u>WATER ACCIDENT BY 60 IN DIA'S PREVIOUSLY</u><br><u>PROHIBITED SOLVENTS</u>   |  |  |  | K. Handling Codes for Wastes Listed Above<br><u>01</u> |  |  |  | EPA/Other <u>1528</u>   |  |
| 15. Special Handling Instructions and Additional Information<br><u>IN CASE OF SPILL CALL 1-800-334-1204</u>  |  |  |  |  |  |  |  |   |  |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |  |  |  |  |   |  |
| Printed/Typed Name<br><u>Michael J Rosenberg</u>   |  |  |  | Signature<br><u>Michael J Rosenberg</u>                |  | Month Day Year<br><u>01/02/91</u>                    |  |   |  |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br><u>Lloyd S Reed</u>   |  |  |  | Signature<br><u>Lloyd S Reed</u>                       |  | Month Day Year<br><u>01/04/91</u>                    |  |   |  |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name  |  |  |  | Signature  |  | Month Day Year                                       |  |   |  |
| 19. Discrepancy Indication Space<br><br><u>MKMR00267</u>   |  |  |  |  |  |  |  |   |  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.<br>Printed/Typed Name<br><u>MARIO FERNANDEZ</u>  |  |  |  |  |  |  |  |   |  |
| Signature<br><u>Mario Fernandez</u>  |  |  |  | Month Day Year<br><u>01/04/91</u>                      |  |  |  |   |  |

Please print or type. Form designed for use on elite (12-pitch typewriter).

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

MKIL058461

90441696  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802. WITHIN CALIFORNIA CALL 1-800-852-7550

**UNIFORM HAZARDOUS  
WASTE MANIFEST**

1. Generator's US EPA ID No.

Manifest  
Document No.

2. Page 1

Information in the shaded areas  
is not required by Federal law.

CA001610131915171513411161916

1 of 1

3. Generator's Name and Mailing Address

McKESSON CORPORATION  
9005 SORENSON AVE, SANTA FE SPRINGS, CA  
90670

A. State Manifest Document Number

90441696

B. State Generator's ID

11A1H1316038070

4. Generator's Phone (415) 983-8671

8. US EPA ID Number

C. State Transporter's ID

LAIDLAW ENVIRONMENTAL

10. US EPA ID Number

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

9. Designated Facility Name and Site Address

CHEM TECH SYSTEMS  
3650 E. 26TH ST  
LOS ANGELES, CA 90023

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

213-268-9672

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers  
No. Type

13. Total  
Quantity

14. Unit  
Wt/Vol

1. Waste No.

a. NON RCRA REGULATED  
HAZARDOUS WASTE LIQUID

010111T0130100 G

State  
214

EPA/Other

State

EPA/Other

State

EPA/Other

State

EPA/Other

J. Additional Descriptions for Materials Listed Above

RINSEATE FROM CLEANING OF TANKS  
PREVIOUSLY CONTAINING SOLVENTS.

CHEM TECH PROFILE # 101221-03

K. Handling Codes for Wastes Listed Above

a.

b.

c.

d.

15. Special Handling Instructions and Additional Information

WEAR GLOVES & GOGGLES DOTE 7476

IN CASE OF EMERGENCY CALL 1-800-334-0004 L.A. REGION

18.

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name

Michael J Rosenberg

Signature

Michael J Rosenberg

Month Day Year

10/10/91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

KEN REYNOLDS

Signature

Ken Reynolds

Month Day Year

10/11/91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

MKMR00254

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

Please print or type. Form designed for use on elite (12-pitch typewriter).

90441696

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.              | Manifest Document No. | 2. Page 1 of 1                                | Information in the shaded areas is not required by Federal law. |
|--|--|---|-----------------------|---|---|
| 3. Generator's Name and Mailing Address<br>MICELSON CORPORATION<br>1235 JONSON AVE, ANAHEIM SPRINGS, CA  |  | C1A0006103R151ZK13411111                  |                       | A. State Manifest Document Number<br>90441696 |   |
| 4. Generator's Phone (714) 123-4567  |  | 10670                                     |                       | B. State Generator's ID<br>H1010131           |   |
| 5. Transporter 1 Company Name<br>A. H. TRANSPORTAL   |  | 6. US EPA ID Number<br>F1010121915111111  |                       | C. State Transporter's ID<br>H1010131         |   |
| 7. Transporter 2 Company Name  |  | 8. US EPA ID Number                       |                       | D. Transporter's Name<br>H1010131             |   |
| 9. Designated Facility Name and Site Address<br>CHEM TECH SYSTEMS<br>3500 C. 20111ST<br>AN 123 123 123   |  | 10. US EPA ID Number<br>F1010121915111111 |                       | E. State Transporter's ID<br>H1010131         |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  | 12. Containers No.                        | 13. Total Quantity    | 14. Unit Wt/Vol                               | 15. Waste No.   |
| a. NON RCRA REGULATED<br>HAZARDOUS WASTE LIQUID  |  | 1   | 1                     | 1   | 214   |
| b.   |  |   |                       |   |   |
| c.   |  |   |                       |   |   |
| d.   |  |   |                       |   |   |
| J. Additional Descriptions for Materials Listed Above<br>KINSTATE FROM CLEANING OF TANKS<br>RECYCLED INDUSTRIAL WASTE<br>101221-03   |  | K. Handling Codes for Wastes Listed Above |                       |   |   |
| 16. Special Handling Instructions and Additional Information<br>DO NOT EXPOSE TO SOLAR RADIATION<br>DO NOT EXPOSE TO DIRECT SUNLIGHT<br>DO NOT EXPOSE TO DIRECT SUNLIGHT   |  |   |                       |   |   |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |                       |   |   |
| Printed/Typed Name<br>Michael J Rosenberg  |  | Signature<br>[Signature]                  |                       | Month Day Year<br>01/02/91                    |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name<br>KAR REYNOLDS        |                       | Signature<br>[Signature]                      |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  | Printed/Typed Name                        |                       | Signature                                     |   |
| 19. Discrepancy Indication Space   |  |   |                       | MKMR00261                                     |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  | Printed/Typed Name                        |                       | Signature                                     |   |

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| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>CA1013101313161811 | Manifest Document No.<br>41161516               | 2. Page 1 of 1             | Information in the shaded areas is not required by Federal law. |
|--|--|--|---|----------------------------|---|
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>7005 SCREEN ON AVE. LANIA RE SPRINGS, CA<br>4. Generator's Phone (415) 745-4671   |  |  | A. State Manifest Document Number<br>90441698   |                            |   |
| 5. Transporter 1 Company Name<br>LAURENCE ENVIRONMENTAL  |  |  | B. State Generator's ID<br>111013101313161811   |                            |   |
| 6. US EPA ID Number<br>1013101313161811  |  |  | C. State Transporter's ID<br>111013101313161811 |                            |   |
| 7. Transporter 2 Company Name  |  |  | D. Transporter's Phone<br>515-978-1700          |                            |   |
| 8. US EPA ID Number  |  |  | E. State Transporter's ID<br>111013101313161811 |                            |   |
| 9. Designated Facility Name and Site Address<br>CHEM TECH SYSTEMS<br>3650 E 26TH ST<br>LOS ANGELES, CA 90023   |  |  | F. Transporter's Phone<br>515-978-1700          |                            |   |
| 10. US EPA ID Number   |  |  | G. State Facility's ID<br>CA1013101313161811    |                            |   |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  | 12. Containers<br>No. Type                      | 13. Total Quantity         | 14. Unit Wt/Vol   |
| a. WASTE, CORROSIVE LIQUID, N.O.S.<br>UN 1760  |  |  | 2100  | 11030000                   | 1   |
| b.   |  |  |   |                            |   |
| c.   |  |  |   |                            |   |
| d.   |  |  |   |                            |   |
| J. Additional Descriptions for Materials Listed Above<br>RINSEATE FROM TANK WASH DEMONSTRATIONS<br>CHEM TECH PROFILE # 101221-04   |  |  | K. Handling Codes for Wastes Listed Above<br>15 |                            |   |
| 15. Special Handling Instructions and Additional Information<br>WEAR GLOVES AND GOGGLES / SPILL PROTECTION<br>IN CASE OF EMERGENCY / CALL 1-800-852-7650 CA REGION   |  |  |   |                            |   |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |   |                            |   |
| Printed/Typed Name<br>Michael J Rosenberg  |  | Signature<br><i>Michael Rosenberg</i>              |   | Month Day Year<br>01/10/91 |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  | Signature<br><i>David Esquivel</i>                 |   | Month Day Year<br>10/10/90 |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  | Signature  |   | Month Day Year             |   |
| 19. Discrepancy Indication Space<br>RECEIVED ONLY 4981 GALS. MKMR00271   |  |  |   |                            |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.  |  |  |   |                            |   |
| Printed/Typed Name<br>THOMAS BIRDERMAN   |  | Signature<br><i>Thomas Birderman</i>               |   | Month Day Year<br>01/10/91 |   |

90441698  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7650

Please print or type. Form designed for use on elite (12-pitch typewriter).

90441698  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br><u>CA1010101319151715131</u> |  | Manifest Document No.<br><u>41116196</u> |   | 2. Page 1 of 1  |                                      | Information in the shaded areas is not required by Federal law. |                                      |                 |  |                               |  |
|--|--|--|--|--|---|---|--------------------------------------|---|--------------------------------------|-----------------|--|-------------------------------|--|
| 3. Generator's Name and Mailing Address<br><u>MCKESSON CORPORATION</u><br><u>9005 SORENSON AVE. SANTA FE SPRINGS, CA</u>   |  |  |  |  |   | A. State Manifest Document Number<br><b>90441698</b>  |                                      |   |                                      |                 |  |                               |  |
| 4. Generator's Phone <u>(415) 923-8671</u>   |  |  |  |  |   | B. State Generator's ID<br><u>171AH1Q1316038070</u>   |                                      |   |                                      |                 |  |                               |  |
| 5. Transporter 1 Company Name<br><u>LAINLAN ENVIRONMENTAL</u>  |  |  |  |  |   | C. State Transporter's ID<br><u>101010100083121</u>   |                                      |   |                                      |                 |  |                               |  |
| 6. US EPA ID Number<br><u>101010100083121</u>  |  |  |  |  |   | D. Transporter's Phone<br><u>215-513-1701</u>   |                                      |   |                                      |                 |  |                               |  |
| 7. Transporter 2 Company Name  |  |  |  |  |   | E. State Transporter's ID<br><u>111908</u>  |                                      |   |                                      |                 |  |                               |  |
| 8. US EPA ID Number  |  |  |  |  |   | F. Transporter's Phone<br><u>518-4700</u>   |                                      |   |                                      |                 |  |                               |  |
| 9. Designated Facility Name and Site Address<br><u>CHEM TECH SYSTEMS</u><br><u>3650 E 26TH ST</u><br><u>LOS ANGELES, CA 90022</u>  |  |  |  |  |   | G. State Facility's ID<br><u>CA1010101013161811</u>   |                                      |   |                                      |                 |  |                               |  |
| 10. US EPA ID Number   |  |  |  |  |   | H. Facility's Phone<br><u>213-268-9672</u>  |                                      |   |                                      |                 |  |                               |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |  |  |  |   | 12. Containers<br>No. Type  |                                      | 13. Total Quantity  |                                      | 14. Unit Wt/Vol |  | 15. Waste No.                 |  |
| a. <u>WASTE, CORROSIVE LIQUID, N.O.S.</u><br><u>UN 1760</u>  |  |  |  |  |   | 01011 TITD130000  |                                      |   |                                      |                 |  | State<br><u>792</u>           |  |
|  |  |  |  |  |   |   |                                      |   |                                      |                 |  | EPA/Other<br><u>0002/0007</u> |  |
|  |  |  |  |  |   |   |                                      |   |                                      |                 |  | State                         |  |
|  |  |  |  |  |   |   |                                      |   |                                      |                 |  | EPA/Other                     |  |
| b.   |  |  |  |  |   |   |                                      |   |                                      |                 |  | State                         |  |
| c.   |  |  |  |  |   |   |                                      |   |                                      |                 |  | State                         |  |
| d.   |  |  |  |  |   |   |                                      |   |                                      |                 |  | State                         |  |
| J. Additional Descriptions for Materials Listed Above<br><u>RINSEATE FROM TANK WASH OPERATIONS</u><br><u>CHEM TECH PROFILE # 101221-04</u>   |  |  |  |  |   | K. Handling Codes for Wastes Listed Above<br>a. <u></u> b. <u></u><br>c. <u></u> d. <u></u> |                                      |   |                                      |                 |  |                               |  |
| 16. Special Handling Instructions and Additional Information<br><u>WEAR GLOVES AND GOGGLES &amp; SPLASH PROTECTION</u><br><u>IN CASE OF EMERGENCY CALL 1800-334-0004 LA REGION</u>   |  |  |  |  |   |   |                                      |   |                                      |                 |  |                               |  |
| 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br><br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |  |   |   |                                      |   |                                      |                 |  |                               |  |
| Printed/Typed Name<br><u>Michael J Rosenberg</u>   |  |  |  |  | Signature<br><u>[Signature]</u>             |   | Month Day Year<br><u>01/10/29/11</u> |   |                                      |                 |  |                               |  |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  |  |  |  | Printed/Typed Name<br><u>DAVID ESPINOZA</u> |   | Signature<br><u>[Signature]</u>      |   | Month Day Year<br><u>10/10/99/10</u> |                 |  |                               |  |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  |  |  |  | Printed/Typed Name                          |   | Signature                            |   | Month Day Year                       |                 |  |                               |  |
| 19. Discrepancy Indication Space   |  |  |  |  | <b>MKMR00255</b>                            |   |                                      |   |                                      |                 |  |                               |  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |  |  |  |   |   |                                      |   |                                      |                 |  |                               |  |
| Printed/Typed Name   |  |  |  |  | Signature                                   |   | Month Day Year                       |   |                                      |                 |  |                               |  |

Please print or type. Form designed for use on effs (12-pitch typewriter).

# UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

KLASSON CORPORATION

1000 REAL PARK DRIVE, SUITE 100, SAN JOSE, CA 95128

4. Generator's Phone ( )

5. Transporter 1 Company Name

6. US EPA ID Number

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. WASTE FROM TANK WASH OPERATIONS

b.

c.

d.

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16.

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name

Michael J Rosenberg

Signature

[Signature]

Month Day Year

01 10 1991

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

DAVID ESPINOZA

Signature

[Signature]

Month Day Year

01 10 1990

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

MKMR00262

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7650

GENERATOR

TRANSPORTER

FACILITY

90441706  
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7650

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.  |  | Manifest Document No.  |  | 2. Page 1 of 1   |  | Information in the shaded areas is not required by Federal law.  |  |
|---|--|---|--|--|--|--|--|--|--|
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>ONE POST STREET<br>SAN FRANCISCO, CA 94104-5276  |  | 4. Generator's Phone (415) 393-3671                                     |  | 5. State Manifest Document Number<br>90441706  |  | 6. State Generator's ID<br>H1A1H031610131810170  |  | 7. State Transporter's ID<br>1315151515151515  |  |
| 5. Transporter 1 Company Name<br>HAWKINS TRANSPORT  |  | 6. US EPA ID Number   |  | 7. State Transporter's ID  |  | 8. Transporter's Phone   |  | 9. State Facility's ID   |  |
| 7. Transporter 2 Company Name   |  | 8. US EPA ID Number   |  | 9. State Transporter's ID  |  | 10. Transporter's Phone  |  | 11. State Facility's ID  |  |
| 9. Designated Facility Name and Site Address<br>OIL PROCESS CO. (ROLLINS)<br>1848 E 55TH ST<br>LOS ANGELES, CA 90058  |  | 10. US EPA ID Number<br>1C1A1DK1510181016181510                         |  | 11. State Facility's ID  |  | 12. Facility's Phone<br>213-583-6040   |  | 13. State Waste No.  |  |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)  |  | 12. Containers<br>No. Type  |  | 13. Total Quantity   |  | 14. Unit Wt/Vol  |  | 15. Waste No.  |  |
| a. WASTE, TOXIC SOLID N.O.S.<br>UN1759  |  | 21012 DIA   |  | 141010 LB  |  | State<br>EPA/Other<br>0002   |  | 352  |  |
| b. NON RICA REGULATED, SOLID WASTE  |  | 81012 DIA   |  | 121010 LB  |  | State<br>EPA/Other   |  |  |  |
| c.  |  |   |  |  |  | State<br>EPA/Other   |  |  |  |
| d.  |  |   |  |  |  | State<br>EPA/Other   |  |  |  |
| 16. Additional Descriptions for Materials Listed Above<br>1) 300 AM 1-1000 WIDE FLAKE & DEBRIS<br>2) MIXED LOTTING CONTAMINATED WITH CORROSIVE MATERIALS # 1275 |  | 17. Handling Codes for Wastes Listed Above<br>a. 1-11 b. 15-11<br>c. d. |  | 18. Special Handling Instructions and Additional Information<br>OPC APPROVAL # OP10693 WEAR PROTECTIVE CLOTHING<br>EMERGENCY # 1-800-334-3004 201 FRANK AVENUE 2-LA REGIONAL |  | 19. Generator's Certification<br>I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |
| Printed/Typed Name<br>Michael J Rosenberg   |  | Signature<br>Michael J Rosenberg  |  | Month Day Year<br>10/21/15/91  |  | 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>Gary Chapman  |  | Signature<br>Gary Chapman  |  |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name   |  | Signature   |  | Month Day Year   |  | 19. Discrepancy Indication Space<br>MKMR00274  |  | 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name<br>Michael J Rosenberg |  |
| Signature<br>Michael J Rosenberg  |  | Month Day Year<br>10/21/15/91   |  |  |  |  |  |  |  |

Please print or type. Form designed for use on elite (12-pitch typewriter).

# UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1

Information in the shaded areas  
is not required by Federal law.

3. Generator's Name and Mailing Address

A. State Manifest Document Number

90441706

4. Generator's Phone

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone

5. Transporter 1 Company Name

6. US EPA ID Number

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers  
No. Type

13. Total  
Quantity

14. Unit  
Wt/Vol

15. Waste No.

a. UN 15 CORROSIVE LIQ. D.O.S.

12. Containers

13. Total

14. Unit

15. Waste No.

b. UN 15 CORROSIVE LIQ. D.O.S.

12. Containers

13. Total

14. Unit

15. Waste No.

c. UN 15 CORROSIVE LIQ. D.O.S.

12. Containers

13. Total

14. Unit

15. Waste No.

d. UN 15 CORROSIVE LIQ. D.O.S.

12. Containers

13. Total

14. Unit

15. Waste No.

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Signature

Month Day Year

Michael J. Rosenberg

[Signature]

02/15/91

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

[Signature]

[Signature]

02/15/91

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

[Signature]

[Signature]

[Signature]

19. Discrepancy Indication Space

MKMR00275

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Month Day Year

[Signature]

[Signature]

[Signature]

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-352-7660

GENERATOR

TRANSPORTER

FACILITY

90441706  
 GENERATOR  
 TRANSPORTER  
 FACILITY  
 IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>CA100610319571534117016 |  | Manifest Document No.<br>1 of 1                          |                                      | 2. Page 1<br>Information in the shaded areas is not required by Federal law |                            |
|--|--|---|--|--|--------------------------------------|---|----------------------------|
| 3. Generator's Name and Mailing Address<br>MCKESSON CORPORATION<br>9005 Sorenson Ave, Santa Fe Springs, CA<br>4. Generator's Phone (415) 423-8671 90670  |  |   |  | A. State Manifest Document Number<br>90441706            |                                      |   |                            |
| 5. Transporter 1 Company Name  |  |   |  | B. State Generator's ID<br>H1AHQ31610318101701           |                                      |   |                            |
| 6. US EPA ID Number  |  |   |  | C. State Transporter's ID                                |                                      |   |                            |
| 7. Transporter 2 Company Name  |  |   |  | D. Transporter's Phone                                   |                                      |   |                            |
| 8. US EPA ID Number  |  |   |  | E. State Transporter's ID                                |                                      |   |                            |
| 9. Designated Facility Name and Site Address<br>OIL PROCESS CO. (ROLLINS)<br>1848 E. 55TH ST<br>LOS ANGELES, CA 90058 CA1010151018101618150  |  |   |  | F. Transporter's Phone                                   |                                      |   |                            |
| 10. US EPA ID Number   |  |   |  | G. State Facility's ID                                   |                                      |   |                            |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)   |  |   |  | H. Facility's Phone<br>213-583-6040                      |                                      |   |                            |
| a. WASTE, CORROSIVE SOLID N.O.S.<br>UN1759   |  |   |  | 12. Containers<br>No. 01012014                           | 13. Total Quantity<br>Type 141010 LB | 14. Unit<br>Wt/Vol  | I. Waste No.<br>State DO02 |
| b. NON RCRA REGULATED, SOLID WASTE   |  |   |  | 01012014   | 121010 LB                            |   | State 352<br>EPA/Other     |
| c.   |  |   |  |  |                                      |   | State<br>EPA/Other         |
| d.   |  |   |  |  |                                      |   | State<br>EPA/Other         |
| J. Additional Descriptions for Materials Listed Above<br>4) SODIUM HYDROXIDE FLAKE & DEBRIS<br>5) PROTECTIVE CLOTHING CONTAMINATED WITH CORROSIVE MATERIALS  |  |   |  | K. Handling Codes for Wastes Listed Above<br>a. b. c. d. |                                      |   |                            |
| 15. Special Handling Instructions and Additional Information<br>OFC APPROVAL # OP10693 WEAR PROTECTIVE CLOTHING<br>EMERGENCY # 1-800-334-0004 P.O. FRANK SANCHEZ - L.A. REGION   |  |   |  |  |                                      |   |                            |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |   |  |  |                                      |   |                            |
| Printed/Typed Name<br>Michael J. Rosenberg   |  |   |  | Signature<br><i>Michael J. Rosenberg</i>                 |                                      | Month Day Year<br>10/1/5/91   |                            |
| 17. Transporter 1 Acknowledgement of Receipt of Materials  |  |   |  | Signature  |                                      | Month Day Year  |                            |
| 18. Transporter 2 Acknowledgement of Receipt of Materials  |  |   |  | Signature  |                                      | Month Day Year  |                            |
| 19. Discrepancy Indication Space<br>MKMR00339  |  |   |  |  |                                      |   |                            |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  |  |   |  |  |                                      |   |                            |
| Printed/Typed Name   |  |   |  | Signature  |                                      | Month Day Year  |                            |

|   |  |  |                                   |  |   |  |  |
|---|--|--|-----------------------------------|--|---|--|--|
| <b>UNIFORM HAZARDOUS WASTE MANIFEST</b>   |  | 1. Generator's US EPA ID No.<br>CA1060395253   | Manifest Document No.<br>01010011 | 2. Page 1 of 1   | Information in the shaded areas is not required by federal law. |  |  |
| 3. Generator's Name and Mailing Address<br>JEAN MESCHER MCKESSON<br>ONE POST STREET, SAN FRANCISCO CALIF CORP   |  | 4. State Manifest Document Number<br>96060867  |                                   | 5. Generator's ID<br>[Shaded]  |   |  |  |
| 6. Generator's Phone<br>(415) 921-5032 7-1104-5276  |  | 7. State Transporter's ID<br>620478  |                                   | 8. Transporter's Phone<br>310-523-4430   |   |  |  |
| 9. Transporter 1 Company Name<br>ADAMS SERVICES, INC.   |  | 10. US EPA ID Number<br>CA119122112516163  |                                   | 11. State Transporter's ID<br>[Shaded]   |   |  |  |
| 12. Transporter 2 Company Name  |  | 13. US EPA ID Number   |                                   | 14. Transporter's Phone  |   |  |  |
| 15. Designated Facility Name and Site Address<br>D'AMICO/KERDOON<br>2000 N. ALAMEDA ST.<br>COMPTON, CA 90222  |  | 16. US EPA ID Number<br>CA10800013352  |                                   | 17. State Facility's ID<br>[Shaded]  |   |  |  |
| 18. Facility's Phone<br>310-537-7100  |  | 19. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)   |                                   |  |   |  |  |
| a. (OIL & WATER) NON-R.C.R.A.<br>HAZARDOUS WASTE LIQUID   |  | 12. Containers<br>No. Type<br>001 TT   |                                   | 13. Total Quantity<br>02200  |   | 14. Unit<br>G                          |  |
| b.  |  |  |                                   |  |   | 1. Waste Numbers<br>State<br>EPA/Other |  |
| c.  |  |  |                                   |  |   | State<br>EPA/Other                     |  |
| d.  |  |  |                                   |  |   | State<br>EPA/Other                     |  |
| Additional Descriptions for Materials Listed Above<br>99% WATER<br>1% OIL   |  | 15. Handling Codes for Wastes Listed Above<br>01   |                                   | 16. Special Handling Instructions and Additional Information<br>DON PROPER PROTECTIVE GEAR<br>NO SMOKING; E.R.G. #27<br>EMERGENCY # (800) 424-9300 |   |  |  |
| 17. Special Handling Instructions and Additional Information<br>DON PROPER PROTECTIVE GEAR<br>NO SMOKING; E.R.G. #27<br>EMERGENCY # (800) 424-9300                          |  | 18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br><br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |                                   |  |   |  |  |
| 19. Printed/Typed Name<br>James E. Furr   |  | 20. Signature<br>[Signature]   |                                   | 21. Month Day Year<br>01 12 1996   |   |  |  |
| 22. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>THOMAS E. ORTIZ  |  | 23. Signature<br>[Signature]   |                                   | 24. Month Day Year<br>01 12 1996   |   |  |  |
| 25. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name   |  | 26. Signature  |                                   | 27. Month Day Year   |   |  |  |
| 28. Discrepancy Indication Space  |  |  |                                   |  |   |  |  |
| 29. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name<br>RALPH KIRMAIER |  | 30. Signature<br>[Signature]   |                                   | 31. Month Day Year<br>01 12 1996   |   |  |  |

DO NOT WRITE BELOW THIS LINE.

96060867  
 IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802. WITHIN CALIFORNIA, CALL 1-800-852-7350

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

96060868

| UNIFORM HAZARDOUS WASTE MANIFEST   |  | 1. Generator's US EPA ID No.<br>CAD0603957530010 011 |  | Manifest Document No.  |  | 2. Page 1 of 1                      |  | Information in the shaded areas is not required by Federal law. |  |
|--|--|--|--|--|--|-------------------------------------|--|---|--|
| 3. Generator's Name and Mailing Address<br>ONE POST STREET<br>SAN FRANCISCO, CA 94102  |  | 4. Generator's Phone<br>(415) 398-0000               |  | 5. Transporter 1 Company Name<br>ADAMS SERVICES, INC.  |  | 6. US EPA ID Number<br>CAI922125668 |  | 7. Transporter 2 Company Name                                   |  |
| 9. Designated Facility/Receiver Address<br>2000 N. ALAMEDA ST.<br>COMPTON, CA 90222  |  | 10. US EPA ID Number<br>CAT080013352                 |  | 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)<br>a. (OIL & WATER) NON-R.C.R.A. HAZARDOUS WASTE LIQUID |  | 12. Containers<br>No. 001 Type TT   |  | 13. Total Quantity<br>01900                                     |  |
| 14. Unit<br>G  |  | 15. Waste Number<br>96060868                         |  | 16. State<br>CA  |  | 17. EPA/Other<br>EPA/Other          |  | 18. State<br>CA   |  |
| 19. Additional Descriptions (or Materials Listed Above)<br>99% WATER<br>1% OIL   |  | 20. Handling Codes for Wastes Listed Above<br>01     |  | 21. State<br>CA  |  | 22. EPA/Other<br>EPA/Other          |  | 23. State<br>CA   |  |
| 15. Special Handling Instructions and Additional Information<br>DON PROPER PROTECTIVE GEAR<br>NO SMOKING; E.R.G. #27<br>EMERGENCY # (800) 424-9300   |  |  |  |  |  |                                     |  |   |  |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable International and national government regulations.<br><br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |  |  |  |  |  |                                     |  |   |  |
| Printed/Typed Name<br>James E. Fleck for Don Dexter  |  | Signature<br>[Signature]                             |  | Month<br>01  |  | Day<br>25                           |  | Year<br>1996  |  |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>Thomas E. Wright  |  | Signature<br>[Signature]                             |  | Month<br>01  |  | Day<br>25                           |  | Year<br>1996  |  |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name  |  | Signature  |  | Month  |  | Day                                 |  | Year  |  |
| 19. Discrepancy Indication Space   |  |  |  |  |  |                                     |  |   |  |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name<br>RALPH KIRMAKER  |  |  |  |  |  |                                     |  |   |  |
| Signature<br>[Signature]   |  | Month<br>01  |  | Day<br>28  |  | Year<br>1996                        |  |   |  |

DO NOT WRITE BELOW THIS LINE.

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

96060869

| UNIFORM HAZARDOUS WASTE MANIFEST  |  | 1. Generator's US EPA ID No.   | Manifest Document No. | 2. Page 1 of 1                                    | Information in the shaded areas is not required by Federal law. |
|---|--|--|-----------------------|---|---|
| 3. Generator's Name and Mailing Address<br>JACKSON (111) 1014714<br>1101 ST 2ND FL<br>SAN FRANCISCO CA 94104  |  | 6. US EPA ID Number<br>C A D P 6 0 3 1 5 7 2 1 5 3   |                       | A. State Manifest Document Number<br>96060869     |   |
| 4. Generator's Phone (915) 942-7598   |  | 7. Transporter 1 Company Name<br>ADAMS SERVICES, INC.  |                       | B. State Generator's ID<br>[Shaded]               |   |
| 5. Transporter 1 Company Name<br>ADAMS SERVICES, INC.   |  | 8. US EPA ID Number<br>C A L 9 2 2 1 2 5 6 6 8   |                       | C. State Transporter's ID<br>620428               |   |
| 7. Transporter 2 Company Name   |  | 8. US EPA ID Number  |                       | D. Transporter's Phone<br>310-523-4430            |   |
| 9. Designated Facility Name and Site Address<br>DAMENNO/KERDOON<br>2000 N. ALAMEDA ST.<br>COMPTON, CA 90222   |  | 10. US EPA ID Number<br>C A T 0 8 0 0 1 3 3 5 2  |                       | E. State Facility's ID<br>C A T 0 8 0 0 1 3 3 5 2 |   |
| 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)  |  | 12. Containers<br>No. Type   |                       | 13. Total Quantity                                |   |
| a. (OIL & WATER) NON-R.C.R.A. HAZARDOUS WASTE LIQUID  |  | 0 0 1 T T  |                       | 03300   |   |
| b.  |  |  |                       |   |   |
| c.  |  |  |                       |   |   |
| d.  |  |  |                       |   |   |
| 17. Additional Descriptions for Materials Listed Above<br>99% WATER<br>1% OIL   |  | K. Handling Codes for Wastes Listed Above<br>a. 01   |                       | b. [Shaded]                                       |   |
| 15. Special Handling Instructions and Additional Information<br>DON PROPER PROTECTIVE GEAR<br>NO SMOKING; E.R.G. #27<br>EMERGENCY # (800) 424-9300                            |  | 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.<br><br>If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. |                       |   |   |
| Printed/Typed Name<br>JEAN A MEECHER  |  | Signature<br>[Signature]   |                       | Month Day Year<br>01 13 01 96                     |   |
| 17. Transporter 1 Acknowledgement of Receipt of Materials<br>Printed/Typed Name<br>THOMAS F. DITING   |  | Signature<br>[Signature]   |                       | Month Day Year<br>01 13 01 96                     |   |
| 18. Transporter 2 Acknowledgement of Receipt of Materials<br>Printed/Typed Name   |  | Signature  |                       | Month Day Year                                    |   |
| 19. Discrepancy Indication Space  |  |  |                       |   |   |
| 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.<br>Printed/Typed Name<br>Gerald W. Wilson |  |  |                       |   |   |
| Signature<br>[Signature]  |  |  |                       |   |   |
| Month Day Year<br>01 13 01 96   |  |  |                       |   |   |

DO NOT WRITE BELOW THIS LINE.

# **Attachment “P”**

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author                 | Title/Subject   |
|----------|---------------------------------|---|
| 2/13/84  | McKesson Environmental Services | McKesson Intra Company Correspondence containing GC/MS analysis of the 2/7/84 sample entitled "Soil Sample Near Underground Heptane Tank" |
| 6/84     | McKesson Environmental Services | Analytical data – contained in Harding Lawson 6/25/92 Remedial Investigation, Volume I, Table 1.  |
| 7/5/84   | McKesson Environmental Services | McKesson Intra Company Correspondence: "June Status Report Santa Fe Springs Soil Sampling"  |
| 8/22/84  | McKesson Environmental Services | GC/MS Analysis  |
| 10/84    | McKesson Environmental Services | Analytical data – contained in Harding Lawson 6/25/92 Remedial Investigation, Volume I, Table 1.  |
| 10/25/84 | McKesson Environmental Services | McKesson Chemical Group letter to DOHS including analytical results from McKesson Environmental Services investigation                    |
| 12/6/84  | McKesson Environmental Services | McKesson Chemical Group letter to DOHS including analytical results from McKesson Environmental Services investigation                    |
| 3/19/85  | McKesson Environmental Services | McKesson Intra Company Correspondence: "Santa Fe Springs – PRF Site Inspection/PVC Pipe Leak"   |
| 3/86     | McKesson Environmental Services | Analytical data – contained in Harding Lawson 6/25/92 Remedial Investigation, Volume I, Table 1.  |
| 5/1/86   | McKesson Environmental Services | McKesson Intra Company Correspondence: "Analytical Results, Santa Fe Springs"   |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author                 | Title/Subject  |
|----------|---------------------------------|--|
| 5/21/86  | McKesson Environmental Services | Letter to DOHS regarding "Site Investigation Results"  |
| 4/11/89  | Tetra Tech                      | Letter to DOHS including analytical results  |
| 10/89    | McKesson Environmental Services | Analytical data – contained in Harding Lawson 6/25/92 Remedial Investigation, Volume I, Table 1. |
| 2/14/90  | Harding Lawson                  | HLA Progress Report – January 1990   |
| 3/15/90  | Harding Lawson                  | HLA Progress Report – February 1990  |
| 4/9/90   | Harding Lawson                  | HLA Quarterly Report – January – March 1990  |
| 4/17/90  | Harding Lawson                  | HLA Progress Report – March 1990   |
| 5/17/90  | Harding Lawson                  | HLA Progress Report – April 1990   |
| 6/19/90  | Harding Lawson                  | HLA Progress Report – May 1990   |
| 7/19/90  | Harding Lawson                  | HLA Progress Report – June 1990  |
| 7/24/90  | Harding Lawson                  | HLA Quarterly Report – April – June 1990   |
| 8/20/90  | Harding Lawson                  | HLA Progress Report – July 1990  |
| 9/14/90  | Harding Lawson                  | HLA Progress Report – August 1990  |
| 10/15/90 | Harding Lawson                  | HLA Progress Report – September 1990   |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject                                       |
|----------|-----------------|---|
| 10/16/90 | Harding Lawson  | HLA Quarterly Report – July – September 1990        |
| 11/5/90  | Harding Lawson  | Letter enclosing results of ten water samples       |
| 11/8/90  | Harding Lawson  | Letter enclosing results of eight water samples     |
| 11/20/90 | Harding Lawson  | HLA Progress Report – October 1990                  |
| 12/4/90  | Harding Lawson  | HLA Summary of Results and Proposed Additional Work |
| 12/13/90 | Harding Lawson  | HLA Progress Report – November 1990                 |
| 1/14/91  | Harding Lawson  | HLA Progress Report – December 1990                 |
| 1/22/91  | Harding Lawson  | HLA Quarterly Report – October – December 1990      |
| 2/13/91  | Harding Lawson  | HLA Progress Report – January 1991                  |
| 3/18/91  | Harding Lawson  | HLA Progress Report – February 1991                 |
| 4/18/91  | Harding Lawson  | HLA Quarterly Report – January – March 1991         |
| 5/14/91  | Harding Lawson  | HLA Progress Report – April 1991                    |
| 6/11/91  | Harding Lawson  | HLA Progress Report – May 1991                      |
| 7/18/91  | Harding Lawson  | HLA Quarterly Report – April – June 1991            |
| 8/26/91  | Harding Lawson  | HLA Progress Report – July 1991                     |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject                                    |
|----------|-----------------|--|
| 9/9/91   | Harding Lawson  | HLA Progress Report – August 1991                |
| 10/18/91 | Harding Lawson  | HLA Quarterly Report – July – September 1991     |
| 11/15/91 | Harding Lawson  | HLA Progress Report – October 1991               |
| 1/14/92  | Harding Lawson  | HLA Quarterly Report – October – December 1991   |
| 1/21/92  | Harding Lawson  | Draft Remedial Investigation Report – Volume I   |
| 1/21/92  | Harding Lawson  | Draft Remedial Investigation Report – Volume II  |
| 1/21/92  | Harding Lawson  | Draft Remedial Investigation Report – Volume III |
| 1/21/92  | Harding Lawson  | Draft Remedial Investigation Report – Volume IV  |
| 2/12/92  | Harding Lawson  | HLA Progress Report – January 1992               |
| 3/17/92  | Harding Lawson  | HLA Progress Report – February 1992              |
| 4/13/92  | Harding Lawson  | HLA Quarterly Report – January – March 1992      |
| 6/17/92  | Harding Lawson  | HLA Progress Report – May 1992                   |
| 6/25/92  | Harding Lawson  | HLA Remedial Investigation – Volume I            |
| 6/25/92  | Harding Lawson  | HLA Remedial Investigation – Volume IV           |
| 7/16/92  | Harding Lawson  | HLA Quarterly Report – April – June 1992         |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author                | Title/Subject   |
|----------|--------------------------------|---|
| 8/1/92   | ChemRisk for Harding<br>Lawson | ChemRisk Baseline Risk Assessment   |
| 8/20/92  | Harding Lawson                 | HLA Revised Remedial Investigation Report (originally dated June 25, 1992)      |
| 9/4/92   | Harding Lawson                 | HLA Progress Report – July – August 1992  |
| 10/14/92 | Harding Lawson                 | HLA Quarterly Report – July – September 1992                                    |
| 10/30/92 | Harding Lawson                 | HLA Revised Remedial Investigation and Feasibility Study                        |
| 11/16/92 | Harding Lawson                 | HLA Progress Report – October 1992  |
| 11/18/92 | ChemRisk for Harding<br>Lawson | ChemRisk Revised Baseline Risk Assessment, originally dated October 1992        |
| 12/14/92 | Harding Lawson                 | HLA Progress Report – November 1992   |
| Aug-93   | GeoMatrix                      | ENSECO report for Geomatrix: Analysis of Volatile Organics                      |
| 11/9/93  | GeoMatrix                      | Results of Phase I Activities & Phase II Work Plan for On-Site Soil Remediation |
| Jun-95   | GeoMatrix                      | Interim Remedial Measure Analysis of Alternatives & Work Plan for Design        |
| Jul-95   | GeoMatrix                      | Interim Remedial Measure Analysis of Alternatives & Work Plan for Design        |
| 1/3/97   | GeoMatrix                      | Monitoring & Reporting Program Monthly Report - November 1996                   |
| 1/28/97  | GeoMatrix                      | Monitoring & Reporting Program 1996 Annual & December Monthly Report            |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject   |
|----------|-----------------|---|
| 2/27/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - January 1997      |
| 3/28/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - February 1997     |
| 4/25/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - March 1997        |
| 5/30/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - April 1997        |
| 6/30/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - May 1997          |
| 7/31/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - June 1997         |
| 8/27/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - July 1997         |
| 9/2/97   | GeoMatrix       | Revised Monitoring & Reporting Program Monthly Report - July 1997 |
| 9/30/97  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - August 1997       |
| 10/20/97 | GeoMatrix       | Monitoring & Reporting Program Monthly Report - September 1997    |
| 11/25/97 | GeoMatrix       | Monitoring & Reporting Program Monthly Report - October 1997      |
| 12/17/97 | GeoMatrix       | Monitoring & Reporting Program Monthly Report - November 1997     |
| 1/23/98  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - December 1997     |
| 2/23/98  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - January 1998      |
| 3/24/98  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - February 1998     |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject  |
|----------|-----------------|--|
| 4/27/98  | GeoMatrix       | Monitoring & Reporting Program Monthly Report - March 1998       |
| 7/9/98   | GeoMatrix       | Source Test Report   |
| 7/14/98  | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: April - June 1998        |
| 10/12/98 | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: July - September 1998    |
| Jan-99   | GeoMatrix       | Supplemental Evaluation  |
| 1/14/99  | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: October - December 1998  |
| Mar-99   | GeoMatrix       | NPDES Self-Monitoring Annual Report: January - December 1998     |
| 3/1/99   | GeoMatrix       | Letter to SCAQMD: Supplemental Risk Assessment Calculations      |
| 3/10/99  | GeoMatrix       | Memo to SCAQMD: Emission Calculations for Secondary Air Stripper |
| 3/17/99  | GeoMatrix       | Wastewater Treatment Self-Monitoring Report                      |
| Apr-99   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: January - March 1999     |
| 4/9/99   | GeoMatrix       | Letter to DTSC: Results of Recent Groundwater Monitoring         |
| 4/12/99  | GeoMatrix       | Wastewater Treatment Self-Monitoring Report                      |
| Jun-99   | GeoMatrix       | Supplemental Evaluation  |
| Jul-99   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: April - June 1999        |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject  |
|----------|-----------------|--|
| 7/16/99  | GeoMatrix       | Groundwater Extraction Well Inorganic Analytical Data  |
| 9/23/99  | GeoMatrix       | Letter to DTSC: Response to Comments & Proposed Revisions/Inserts  |
| Oct-99   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: July - September 1999  |
| 10/5/99  | GeoMatrix       | Transmittal to DTSC including Table 3-2 Estimated Indoor Air Concentrations Associated with Volatilization of Chemicals from Soil    |
| Jan-99   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: October - December 1999  |
| Apr-00   | GeoMatrix       | NPDES Self-Monitoring Annual Report: January - December 1999   |
| Apr-00   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: January - March 2000   |
| 4/11/00  | GeoMatrix       | Fax to City of Santa Fe Springs - Analytical Results for 1,4 Dioxane   |
| 5/3/00   | GeoMatrix       | Analytical Data for Intrinsic Bioremediation Pilot Study   |
| Jun-00   | GeoMatrix       | Five-Year Review of Remediation Progress   |
| Jul-00   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: April - June 2000  |
| 9/18/00  | GeoMatrix       | Transmittal to SCAQMD - Operational & Analytical Data for the Remediation System   |
| Oct-00   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: July - September 2000  |
| 11/14/00 | GeoMatrix       | Letter to DTSC: Response to Comments from DTSC, Revised Five-Year Review of Remedial Progress, and Revised IRM Implementation Report |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject  |
|----------|-----------------|--|
| Jan-01   | GeoMatrix       | NPDES Self-Monitoring Quarterly Report: October - December 2000  |
| 10/31/01 | GeoSyntec       | Site Characterization report   |
| 11/21/01 | GeoSyntec       | 4 <sup>th</sup> Quarter 2001 Groundwater Monitoring Report   |
| 2/19/02  | GeoSyntec       | 1 <sup>st</sup> Quarter 2002 Groundwater Monitoring Report   |
| 7/1/02   | GeoSyntec       | 2 <sup>nd</sup> Quarter 2002 Groundwater Monitoring Report   |
| 7/01/02  | GeoSyntec       | Analytical Data (May 2002) for IWW Discharge Permit Application<br>Anticipated Annual Discharge Calculations   |
| 8/29/02  | GeoSyntec       | Monitoring well surveyed coordinates and top of casing elevations<br>Monitoring well surveyed coordinates, top of casing & ground surface elevations |
| 9/11/02  | GeoSyntec       | 3 <sup>rd</sup> Quarter 2002 Groundwater Monitoring Report   |
| 9/16/02  | GeoSyntec       | Required laboratory analyses for 3 <sup>rd</sup> quarter 2002 monitoring event.  |
| 12/13/02 | GeoSyntec       | 4 <sup>th</sup> Quarter 2002 Groundwater Monitoring Report   |
| 3/18/03  | GeoSyntec       | 1 <sup>st</sup> Quarter 2003 Groundwater Monitoring Report   |
| 3/18/03  | GeoSyntec       | Table - Vapor Sampling Results (04/08/03)  |
| 8/1/03   | GeoSyntec       | 2 <sup>nd</sup> Quarter 2003 Groundwater Monitoring Report   |
| 10/7/03  | GeoSyntec       | 3 <sup>rd</sup> Quarter 2003 Monitoring Report   |

### McKesson Santa Fe Springs - Technical and Analytical Data

| Date     | Document Author | Title/Subject  |
|----------|-----------------|--|
| 10/31/03 | GeoSyntec       | Shallow Groundwater Installation Report                    |
| 10/30/03 | GeoSyntec       | Survey results shallow monitoring wells                    |
| 4/8/04   | GeoSyntec       | 1st Quarter 2004 Groundwater Monitoring Report             |
| 7/14/04  | GeoSyntec       | 2 <sup>nd</sup> Quarter 2004 Groundwater Monitoring Report |
| 9/30/04  | GeoSyntec       | 3 <sup>rd</sup> Quarter 2004 Groundwater Monitoring Report |
| 12/30/04 | GeoSyntec       | 4 <sup>th</sup> Quarter 2004 Groundwater Monitoring Report |
| 3/20/05  | GeoSyntec       | 1 <sup>st</sup> Quarter 2005 Groundwater Monitoring Report |
| 7/10/05  | GeoSyntec       | 2 <sup>nd</sup> Quarter 2005 Groundwater Monitoring Report |
| 11/14/05 | GeoSyntec       | 3 <sup>rd</sup> Quarter 2005 Groundwater Monitoring Report |

# **Attachment “R”**

Foremost-McKesson  
Chemical Group  
McKesson Chemical Company  
Bulk Plant  
9005 Sorensen Avenue  
Santa Fe Springs, CA 90670  
213 698 6201

June 7, 1984



Chief B. T. Cannard  
Headquarters Fire Station  
City of Santa Fe Springs  
11300 Greenstone Av.  
Santa Fe Springs, Ca. 90670

Dear Chief Cannard,

As per Ordinance No. 623, attached you will find listed all of the "hazardous material" stored at McKesson's two facilities in Santa Fe Springs.

We have previously forwarded copies of all "material safety data sheets".

If you have any further questions, please advise.

Respectfully,

A handwritten signature in cursive script, appearing to read 'D. L. Wettstead'.

D. L. Wettstead  
Facility Manager

dlw/bk

attachment

CC: A. M. McMahon  
J. Hill

JS 015223



Serving the Nation  
Since 1833

MKIL03826

KEY: for storage locations at 9005 Sorensen Av., Santa Fe Springs

- A Above ground corrosive storage tanks
- B Above ground solvent storage tanks
- C Under ground solvent storage tanks
- D Yard
- E Warehouse
- F Rail spurs

KEY: for storage locations at 11600 Pike St., Santa Fe Springs

- A Rail Spur
- B Yard
- C Warehouse

JS 015224

MKIL03827

SANTA FE SPRINGS FIRE DEPARTMENT  
HAZARDOUS MATERIALS IDENTIFICATION

JS 015225

MKIL03828

BUSINESS NAME NEB. Chem. Co.

BUSINESS ADDRESS 1600 E. 1st St. N. Fargo

| Common Chemical Name                           | Trade Name  | Concentration       | Quantity            | Type of Container    | Location Symbol | Dot Number  |
|--|-------------|---------------------|---------------------|----------------------|-----------------|-------------|
| <u>Chlorine</u>                                | <u>same</u> | <u>99.9</u>         | <u>180-270 TONS</u> | <u>R/C</u>           | <u>A</u>        | <u>1017</u> |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| <u>Chlorine</u>                                | <u>same</u> | <u>99.9</u>         | <u>1-40 bag</u>     | <u>in building</u>   | <u>B</u>        | <u>1017</u> |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| <u>Chlorine</u>                                | <u>same</u> | <u>99.9</u>         | <u>40-200 bag</u>   | <u>150 cylinders</u> | <u>B</u>        | <u>1017</u> |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| <u>Sodium Hydroxide Dry Caustic Soda Brads</u> | <u>99.9</u> | <u>100-200 TONS</u> | <u>R/C</u>          | <u>A/C</u>           | <u>1835</u>     |             |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| <u>Sodium Hydroxide Dry Caustic Soda Brads</u> | <u>99.9</u> | <u>200-400 bag</u>  | <u>drums</u>        | <u>C</u>             | <u>1835</u>     |             |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| Comments: _____                                |             |                     |                     |                      |                 |             |
| Comments: _____                                |             |                     |                     |                      |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

SANTA FE SPRINGS FIRE DEPARTMENT  
HAZARDOUS MATERIALS IDENTIFICATION

JS 015226

BUSINESS NAME McBerson Chemical

BUSINESS ADDRESS: 9005 Hansen Blvd. Santa Fe Springs

MKIL03829

| Common Chemical Name             | Trade Name                 | Concentration | Quantity                        | Type of Container   | Location Symbol | Dot Number   |
|----------------------------------|----------------------------|---------------|---------------------------------|---------------------|-----------------|--------------|
| <u>Acetic Acid</u>               | <u>Glacial Acetic Acid</u> | <u>99%</u>    | <u>40,000 lbs apx</u>           | <u>Storage Tank</u> | <u>A</u>        | <u>2789</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Acetic Acid</u>               | <u>Glacial Acetic Acid</u> | <u>99%</u>    | <u>1 - 50 apx</u>               | <u>drums</u>        | <u>D</u>        | <u>2789</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Acetic Acid</u>               | <u>Acetic Acid 80%</u>     | <u>80%</u>    | <u>1 - 50 apx</u>               | <u>drums</u>        | <u>D</u>        | <u>2790</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Acetone</u>                   | <u>Acetone</u>             | <u>99.9</u>   | <u>20,000 lbs - 200,000 lbs</u> | <u>Bulk</u>         | <u>C</u>        | <u>1090</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Acetone</u>                   | <u>Acetone</u>             | <u>99.9</u>   | <u>1 - 200 apx</u>              | <u>drums/drums</u>  | <u>D</u>        | <u>1090</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Aluminum Sulfate Solution</u> | <u>Same</u>                | <u>3.3</u>    | <u>1 - 40 apx</u>               | <u>drums</u>        | <u>D</u>        | <u>1760</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Ammonium Trisulfate</u>       | <u>Same</u>                | <u>60</u>     | <u>1 - 40 apx</u>               | <u>drums</u>        | <u>D</u>        | <u>909.5</u> |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Butyl Acetate</u>             | <u>Same</u>                | <u>99.9</u>   | <u>1 - 40 apx</u>               | <u>drums</u>        | <u>D</u>        | <u>1133</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |
| <u>Butyl Alcohol</u>             | <u>Same</u>                | <u>99.9</u>   | <u>1 - 40 apx</u>               | <u>drums</u>        | <u>D</u>        | <u>1120</u>  |
| Comments: _____                  |                            |               |                                 |                     |                 |              |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

HAZARDOUS MATERIALS IDENTIFICATION

JS 015227

MKILO3830

BUSINESS NAME Nicholson Chemical

BUSINESS ADDRESS 9205 Jackson Dr - North, B. Boring

| Common Chemical Name       | Trade Name  | Concentration        | Quantity                                   | Type of Container   | Location Symbol | Dot Number  |
|----------------------------|-------------|----------------------|--|---------------------|-----------------|-------------|
| <u>Cyclohexanone</u>       | <u>same</u> | <u>99.9</u>          | <u>1- 80 gpx</u>                           | <u>drums</u>        | <u>D</u>        | <u>1115</u> |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Dimethyl Ketone</u>     | <u>same</u> | <u>"</u>             | <u>1- 10 gpx</u>                           | <u>drums</u>        | <u>D</u>        | <u>1157</u> |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Ethyl Acetate</u>       | <u>same</u> | <u>99% &amp; 85%</u> | <u>1- 30 gpx</u>                           | <u>drums</u>        | <u>D</u>        | <u>1173</u> |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Ethylene Dichloride</u> | <u>same</u> | <u>99.9</u>          | <u>1- 20 gpx</u>                           | <u>drums</u>        | <u>D</u>        | <u>1184</u> |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Ethylene Glycol</u>     | <u>same</u> | <u>99.9</u>          | <u>1000 lbs to 40,000 lbs storage tank</u> | <u>B</u>            | <u>none</u>     |             |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Ethylene Glycol</u>     | <u>same</u> | <u>99.9</u>          | <u>1- 60 gpx</u>                           | <u>drums</u>        | <u>D</u>        | <u>none</u> |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Formaldehyde</u>        | <u>same</u> | <u>37% / 38</u>      | <u>35,000 lbs gpx</u>                      | <u>Storage tank</u> | <u>A</u>        | <u>1198</u> |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Formic Acid</u>         | <u>same</u> | <u>90%</u>           | <u>7000 to 45000 lbs storage tank</u>      | <u>F</u>            | <u>1779</u>     |             |
| Comments: _____            |             |                      |  |                     |                 |             |
| <u>Formic Acid</u>         | <u>same</u> | <u>90%</u>           | <u>1- 40 gpx</u>                           | <u>drums</u>        | <u>D</u>        | <u>1779</u> |
| Comments: _____            |             |                      |  |                     |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

## HAZARDOUS MATERIALS IDENTIFICATION

BUSINESS NAME McEwen ChemicalBUSINESS ADDRESS 9005 Division Ave. North, J. Ariz.

MKIL03831

| Common Chemical Name     | Trade Name  | Concentration | Quantity                    | Type of Container                     | Location Symbol | Dot Number  |
|--------------------------|---|---------------|-----------------------------|---------------------------------------|-----------------|-------------|
| <u>Glycolene Glycol</u>  | <u>Same</u>   | <u>0.79</u>   | <u>1-40 apx</u>             | <u>Drums</u>                          | <u>D</u>        |             |
| Comments:                |   |               |                             |                                       |                 |             |
| <u>Hydrochloric Acid</u> | <u>Same (37% Be)</u>  | <u>36%</u>    | <u>100,000 lbs apx</u>      | <u>Storage tank</u><br><u>or K/10</u> | <u>A/F</u>      | <u>1789</u> |
| Comments:                |   |               |                             |                                       |                 |             |
| <u>Hydrochloric Acid</u> | <u>Same (37% Be)</u>  | <u>37%</u>    | <u>1000 - 500,000 lbs</u>   | <u>Storage tank</u>                   | <u>A</u>        | <u>1789</u> |
| Comments:                |   |               |                             |                                       |                 |             |
| <u>Hydrochloric Acid</u> | <u>Same (37% Be)</u>  | <u>37%</u>    | <u>1-20 apx</u>             | <u>Drums/Storage</u>                  | <u>D</u>        | <u>1789</u> |
| Comments:                |   |               |                             |                                       |                 |             |
| <u>Hydrofluoric Acid</u> | <u>Same</u>   | <u>70</u>     | <u>2,000 gal capacity</u>   | <u>Storage tank</u>                   | <u>A</u>        | <u>1789</u> |
| Comments:                | <u>as of 5/22/84 tank out of service... expect to be in service on or before 9/84</u> |               |                             |                                       |                 |             |
| <u>Hydrofluoric Acid</u> | <u>Same</u>   | <u>70</u>     | <u>1-100 apx</u>            | <u>Drums</u>                          | <u>D</u>        | <u>1790</u> |
| Comments:                | <u>no drum stock until tank in service</u>  |               |                             |                                       |                 |             |
| <u>Isobutanol</u>        | <u>Isobutyl Alcohol</u>   | <u>99.9</u>   | <u>1-30 apx</u>             | <u>Drums</u>                          | <u>D</u>        | <u>1212</u> |
| Comments:                |   |               |                             |                                       |                 |             |
| <u>Isopropyl Alcohol</u> | <u>Isopropanol</u>  | <u>99</u>     | <u>10,000 - 200,000 lbs</u> | <u>Storage tank</u><br><u>K/10</u>    | <u>C/F</u>      | <u>1217</u> |
| Comments:                |   |               |                             |                                       |                 |             |
| <u>Isopropyl Alcohol</u> | <u>Isopropanol</u>  | <u>99</u>     | <u>1-100 apx</u>            | <u>Drums</u>                          | <u>D</u>        | <u>1217</u> |
| Comments:                |   |               |                             |                                       |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

## SANTA FE SPRINGS FIRE DEPARTMENT

## HAZARDOUS MATERIALS IDENTIFICATION

JS 015229

BUSINESS NAME Moffett ChemicalBUSINESS ADDRESS 9005 Jansen Ave. Santa Fe Springs

MKIL03832

| Common Chemical Name          | Trade Name      | Concentration  | Quantity                    | Type of Container        | Location Symbol | Dot Number  |
|-------------------------------|-----------------|----------------|-----------------------------|--------------------------|-----------------|-------------|
| <u>Isopropylamine</u>         | <u>Same</u>     | <u>99.9</u>    | <u>1-4 cys</u>              | <u>Drums</u>             | <u>D</u>        | <u>1321</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Methyl Alcohol</u>         | <u>Methanol</u> | <u>99.9</u>    | <u>10000 - 200,000 lbs</u>  | <u>Storage tank</u>      | <u>C/F</u>      | <u>1330</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Methyl Alcohol</u>         | <u>Methanol</u> | <u>99.9</u>    | <u>50 - 150 avg.</u>        | <u>Drums</u>             | <u>D</u>        | <u>1331</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Methylene Chloride</u>     | <u>Same</u>     | <u>99.9</u>    | <u>10000 - 200,000 lbs</u>  | <u>Storage tank</u>      | <u>F</u>        | <u>1393</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Methylene Chloride</u>     | <u>Same</u>     | <u>99.9</u>    | <u>50 - 150 avg.</u>        | <u>Drums</u>             | <u>F</u>        | <u>1393</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Methyl Isobutyl Ketone</u> | <u>Same</u>     | <u>99.9</u>    | <u>5-55 avg.</u>            | <u>Drums</u>             | <u>D</u>        | <u>235</u>  |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Morpholine</u>             | <u>Same</u>     | <u>99.9</u>    | <u>20 - 100 avg.</u>        | <u>Drums</u>             | <u>D</u>        | <u>2054</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Nitric Acid</u>            | <u>Same</u>     | <u>50% Re.</u> | <u>1000 - 2000 gal avg.</u> | <u>Bulk Storage tank</u> | <u>A</u>        | <u>1700</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |
| <u>Nitric Acid</u>            | <u>Same</u>     | <u>58-59</u>   | <u>5 - 15 avg.</u>          | <u>Drums</u>             | <u>D</u>        | <u>1702</u> |
| Comments: _____               |                 |                |                             |                          |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

## SANTA FE SPRINGS FIRE DEPARTMENT

JS 015230

## HAZARDOUS MATERIALS IDENTIFICATION

BUSINESS NAME Pickens ChemicalBUSINESS ADDRESS 205 S. Jensen Co. Santa Fe Springs, Ca

MKIL03833

| Common Chemical Name           | Trade Name                 | Concentration | Quantity                   | Type of Container                 | Location Symbol | Dot Number  |
|--------------------------------|----------------------------|---------------|----------------------------|-----------------------------------|-----------------|-------------|
| <u>Nitric Acid</u>             | <u>Same</u>                | <u>42% BE</u> | <u>1000 - 4000 gal avg</u> | <u>Storage tank</u>               | <u>A</u>        | <u>2031</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>Nitric Acid</u>             | <u>Same</u>                | <u>42% BE</u> | <u>10 - 40 avg</u>         | <u>drums</u>                      | <u>D</u>        | <u>2031</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>Potassium Hydroxide Liq</u> | <u>Caustic Potash</u>      | <u>50%</u>    | <u>1000 - 3000 g avg</u>   | <u>Storage tank</u><br><u>R/C</u> | <u>A/F</u>      | <u>1814</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>Potassium Hydroxide Liq</u> | <u>Caustic Potash</u>      | <u>50%</u>    | <u>50 - 150 w avg</u>      | <u>drums</u>                      | <u>D</u>        | <u>1814</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>Potassium Hydroxide Liq</u> | <u>Caustic Potash</u>      | <u>45%</u>    | <u>50 - 100 avg</u>        | <u>drums</u>                      | <u>D</u>        | <u>1814</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>n-propyl Acetate</u>        | <u>Same</u>                | <u>91.9%</u>  | <u>1 - 10 avg</u>          | <u>drums</u>                      | <u>D</u>        | <u>1374</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>n-propyl Alcohol</u>        | <u>Same</u>                | <u>91.9%</u>  | <u>1 - 10 avg</u>          | <u>drums</u>                      | <u>D</u>        | <u>1374</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>Standard Solvent</u>        | <u>Regular Mineral Oil</u> | <u>91.7%</u>  | <u>20 - 80 avg</u>         | <u>drums</u>                      | <u>D</u>        | <u>535</u>  |
| Comments:                      |                            |               |                            |                                   |                 |             |
| <u>Sodium Hydroxide Liq</u>    | <u>Caustic Soda</u>        | <u>50%</u>    | <u>1000 - 5000 g avg</u>   | <u>Storage tank</u><br><u>R/C</u> | <u>A/F</u>      | <u>1824</u> |
| Comments:                      |                            |               |                            |                                   |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

SANTA FE SPRINGS FIRE DEPARTMENT  
HAZARDOUS MATERIALS IDENTIFICATION

JS 015231

MKIL03834

BUSINESS NAME PRB Chemical

BUSINESS ADDRESS 2105 S. Dawson, Santa Fe Springs

| Common Chemical Name         | Trade Name          | Concentration                          | Quantity                   | Type of Container   | Location Symbol | Dot Number  |
|------------------------------|---------------------|--|----------------------------|---------------------|-----------------|-------------|
| <u>Sodium Hydroxide, Liq</u> | <u>Caustic Soda</u> | <u>50%</u>                             | <u>1/2 - 200 lbs avg.</u>  | <u>Drums</u>        | <u>D</u>        | <u>1823</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Sodium Hydroxide, Liq</u> | <u>Caustic Soda</u> | <u>50%</u>                             | <u>1 - 10 lbs. avg.</u>    | <u>Drums</u>        | <u>D</u>        | <u>1824</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Styrene Monomer</u>       | <u>Stene</u>        | <u>99.9</u>                            | <u>1 - 200 avg</u>         | <u>Drums</u>        | <u>D</u>        | <u>1855</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Sulfuric Acid</u>         | <u>Same</u>         | <u>94%</u>                             | <u>500 - 1000 g. avg.</u>  | <u>Storage tank</u> | <u>A/F</u>      | <u>1825</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Sulfuric Acid</u>         | <u>Same</u>         | <u>66% H<sub>2</sub>SO<sub>4</sub></u> | <u>40 - 100 Drums</u>      | <u>Drums</u>        | <u>D</u>        | <u>1826</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Toluol</u>                | <u>Toluene</u>      | <u>99.9</u>                            | <u>20 - 50 avg</u>         | <u>Drums</u>        | <u>D</u>        | <u>1827</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Toluol</u>                | <u>Toluene</u>      | <u>99.9</u>                            | <u>1000 - 2000 g avg</u>   | <u>Storage tank</u> | <u>C</u>        | <u>1828</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>Tetrahydrofuran</u>       | <u>THF</u>          | <u>99.9</u>                            | <u>1 - 20 avg</u>          | <u>Drums</u>        | <u>D</u>        | <u>1829</u> |
| Comments:                    |                     |  |                            |                     |                 |             |
| <u>1,1,1-Trichloroethane</u> | <u>Same, SM</u>     | <u>99.9</u>                            | <u>2000 - 10000 g. avg</u> | <u>Storage tank</u> | <u>B</u>        | <u>1830</u> |
| Comments:                    |                     |  |                            |                     |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Contain

SANTA FE SPRINGS FIRE DEPARTMENT  
HAZARDOUS MATERIALS IDENTIFICATION

JS 015232

BUSINESS NAME McLendon Chemical

BUSINESS ADDRESS 205 Durbin Ave Santa Fe Springs

| Common Chemical Name                  | Trade Name             | Concentration | Quantity              | Type of Container   | Location Symbol | Dot Number  |
|---------------------------------------|------------------------|---------------|-----------------------|---------------------|-----------------|-------------|
| <u>1, 1, 1 Trichloroethane</u>        | <u>same, SH</u>        | <u>99.9%</u>  | <u>20-40 avg</u>      | <u>dr.</u>          | <u>E</u>        | <u>2831</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>1, 1, 1 Trichloroethane</u>        | <u>same, VDG</u>       | <u>99.9%</u>  | <u>20-40 avg</u>      | <u>dr.</u>          | <u>E</u>        | <u>2831</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Ethanolamine</u>                   | <u>same</u>            | <u>85%</u>    | <u>1-10 avg</u>       | <u>dr.</u>          | <u>D</u>        | <u>none</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Ethanolamine</u>                   | <u>same</u>            | <u>99%</u>    | <u>1-10 avg</u>       | <u>dr.</u>          | <u>E</u>        | <u>none</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Ethanolamine</u>                   | <u>same</u>            | <u>75%</u>    | <u>1-10 avg</u>       | <u>dr.</u>          | <u>E</u>        | <u>none</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Monoethanolamine</u>               | <u>same</u>            | <u>99.9%</u>  | <u>20-60 avg</u>      | <u>dr.</u>          | <u>D</u>        | <u>2831</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Monoethanolamine</u>               | <u>same</u>            | <u>75%</u>    | <u>20-60 avg</u>      | <u>dr.</u>          | <u>D</u>        | <u>2831</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Dodecylbenzenesulfonic Acid</u>    | <u>LAB-99</u>          | <u>99.9%</u>  | <u>1-15 avg</u>       | <u>dr.</u>          | <u>D</u>        | <u>2834</u> |
| Comments: _____                       |                        |               |                       |                     |                 |             |
| <u>Thinnick, M&amp;P, &amp; Paint</u> | <u>M&amp;P V&amp;P</u> | <u>99.9%</u>  | <u>100-3000 g avg</u> | <u>Storage tank</u> | <u>C/F</u>      | <u>125</u>  |
| Comments: _____                       |                        |               |                       |                     |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

MKIL03835

SANTA FE SPRINGS FIRE DEPARTMENT  
HAZARDOUS MATERIALS IDENTIFICATION

JS 015233

9403836

BUSINESS NAME McKesson Chemical

BUSINESS ADDRESS 605 Shuman Ave. Santa Fe Springs

| Common Chemical Name                           | Trade Name          | Concentration | Quantity                | Type of Container   | Location Symbol | Dot Number  |
|--|---------------------|---------------|-------------------------|---------------------|-----------------|-------------|
| <u>Tarnish Remover &amp; Paint</u>             | <u>McKesson HMP</u> | <u>99.9%</u>  | <u>10-25 avg</u>        | <u>drums</u>        | <u>D</u>        | <u>1350</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>Xylenol</u>                                 | <u>Xylene</u>       | <u>99.9%</u>  | <u>1000-10000 avg</u>   | <u>storage tank</u> | <u>C/E</u>      | <u>1367</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>Xylenol</u>                                 | <u>Xylene</u>       | <u>99.9</u>   | <u>50-80 avg</u>        | <u>drums</u>        | <u>D</u>        | <u>1367</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>Methyl Ethyl Ketone</u>                     | <u>Same</u>         | <u>99.9</u>   | <u>1000-30000 avg</u>   | <u>drums</u>        | <u>C/E</u>      | <u>1192</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>Methyl Ethyl Ketone</u>                     | <u>Same</u>         | <u>99.9</u>   | <u>50-150 avg</u>       | <u>dr.</u>          | <u>D</u>        | <u>1193</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>Trichloroethylene</u>                       | <u>Same</u>         | <u>99.9</u>   | <u>10-25 avg</u>        | <u>dr.</u>          | <u>E</u>        | <u>1110</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>SDA Alcohol</u>                             | <u>Same</u>         | <u>99.9</u>   | <u>1-15 avg</u>         | <u>dr.</u>          | <u>D</u>        | <u>1120</u> |
| Comments: <u>(Kept in locked storage area)</u> |                     |               |                         |                     |                 |             |
| <u>Hydrogen Peroxide</u>                       | <u>Same</u>         | <u>70%</u>    | <u>1000-7000 ga avg</u> | <u>R/C</u>          | <u>F</u>        | <u>2015</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |
| <u>Hydrogen Peroxide</u>                       | <u>Same</u>         | <u>50%</u>    | <u>500-5000 avg</u>     | <u>blow tank</u>    | <u>A</u>        | <u>2014</u> |
| Comments: _____                                |                     |               |                         |                     |                 |             |

Date \_\_\_\_\_

PLEASE TYPE OR PRINT PLAINLY

Captain \_\_\_\_\_

MKIL03837

BUSINESS ADDRESS: 9005 Dacotah Dr. North, Ft. Smith

JS 015234

Captain :

# **Attachment “S”**

PGM: CK02L21P VER 01.4  
DATE: 09/28/84 TIME: 22:41:05

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
09/84

REPORT NO: CK02R25A PAGE: 1  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|------------------|-----------|---------------|----------|---------------|------------|-------|--|
| 01002-005            | PROPYLENE GLYCOL |           | USP           | LIQ      | 001 GL BLK LB |            |       |  |
| TYP                  | REF-#            | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHQ                  |                  | CUI       | MATERIAL GAIN | 36.49    | +760          | \$277.32   | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |               |          |               | \$277.32   |       |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------------------|-----------|---------------|----------|---------------|--------------|----------|--|
| 01004-001            | HYDROXYACETIC ACID 70% |           | *             | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#                  | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08258             | CUH       | 50/POLY DRUMS | 58.52    | -27,500       | \$16,093.00- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                        |           |               |          |               | \$16,093.00- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|-----------|-----------|----------------------|----------|---------------|-------------|-------|--|
| 01011-002            | CHLORINE  |           | *                    | GAS      | 001 LB BLK LB |             |       |  |
| TYP                  | REF-#     | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OHQ                  |           | CUI       | CRCT DBL DRW ON 8010 | 7.58     | +57,275       | \$4,341.45  | 59417 |  |
|                      |           | CUI       | CRCT #196 DRW DWN-BK | 7.58     | +15,000       | \$1,137.00  |       |  |
|                      |           | CUI       | REVS #196 DRW DWN-   | 7.58     | +31,760       | \$2,407.41  |       |  |
|                      |           | CUI       | #196                 | 7.58     | -99,999       | \$7,579.92- |       |  |
|                      |           | CUI       | MATERIAL GAIN        | 7.58     | +45,920       | \$3,480.74  |       |  |
| NET AMOUNT ADJUSTED: |           |           |                      |          |               | \$3,786.68  |       |  |

| TYP | REF-#      | OPID | REASON               | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|----------------------|----------|------------|-------------|----------|
| RPK | 544-P07926 | CUH  |                      | 7.58     | -5,934     | \$449.80-   | 13116501 |
|     | 544-P07965 | CUH  |                      | 7.58     | -12,000    | \$909.60-   |          |
|     | 544-P07966 | CUH  |                      | 7.58     | -41,250    | \$3,126.75- |          |
|     | 544-P08010 | CUH  |                      | 7.58     | -57,275    | \$4,341.45- |          |
|     | 544-P08010 | CUH  |                      | 7.58     | -57,275    | \$4,341.45- |          |
|     | 544-P08031 | CUH  |                      | 7.58     | -56,450    | \$4,278.91- |          |
|     | 544-P08056 | CUH  | 41340# BULK BLEACH   | 7.58     | -5,416     | \$410.53-   |          |
|     | 544-P08076 | CUI  | #195                 | 7.58     | -91,150    | \$6,909.17- |          |
|     | 544-P08077 | CUI  | #196                 | 7.58     | -9,600     | \$727.68-   |          |
|     | 544-P08077 | CUI  | #196                 | 7.58     | -10,161    | \$770.20-   |          |
|     | 544-P08078 | CUI  | #197                 | 7.58     | -82,000    | \$6,215.60- |          |
|     | 544-P08104 | CUH  | 7340# BLEACH         | 7.58     | -962       | \$72.92-    |          |
|     | 544-P08110 | CUH  | #198                 | 7.58     | -71,000    | \$5,381.80- |          |
|     | 544-P08115 | CUH  | 17/TONS #199         | 7.58     | -34,000    | \$2,577.20- |          |
|     | 544-P08146 | CUI  | #201-41T/91-150      | 7.58     | -95,640    | \$7,249.51- |          |
|     | 544-P08168 | CUI  | #202-23T/17CUST/9MCK | 7.58     | -49,900    | \$3,782.42- |          |
|     | 544-P08184 | CUI  | #203 (23T)           | 7.58     | -46,000    | \$3,486.80- |          |
|     | 544-P08213 | CUI  | #204                 | 7.58     | -76,100    | \$5,768.38- |          |
|     | 544-P08250 | CUH  |                      | 7.58     | -10,468    | \$794.99-   |          |
|     | 544-P08251 | CUH  |                      | 7.58     | -10,000    | \$758.00-   |          |
|     | 544-P08252 | CUH  | 25/150 + 19/TONS     | 7.58     | -41,750    | \$3,164.65- |          |
|     | 544-P08253 | CUH  | 25/TONS              | 7.58     | -50,000    | \$3,790.00- |          |
|     | 544-P08276 | CUH  | 30/TONS              | 7.58     | -60,000    | \$4,548.00- |          |
|     | 544-P08302 | CUH  | 109/150 + 16/TONS    | 7.58     | -48,350    | \$3,664.93- |          |

MCK0062028

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

544-P08306 CUH 25/150 + 19/TONS 7.58 -41,750 \$3,164.65-

NET AMOUNT ADJUSTED: \$80,685.39-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|-------------|-----------|--------------------|----------|---------------|-------------|----------|--|
| 01013-001 | ACETIC ACID | GLACIAL   | *                  | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#       | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P07984  | CUH       |                    | 23.61    | -14,352       | \$3,388.51- | 13116501 |  |
|           | 544-P07985  | CUH       |                    | 23.61    | -18,000       | \$4,249.80- |          |  |
|           | 544-P07986  | CUH       |                    | 23.61    | -3,300        | \$779.13-   |          |  |
|           | 544-P07987  | CUH       |                    | 23.61    | -13,500       | \$3,187.35- |          |  |
|           | 544-P08114  | CUH       | 5000GALS 80% BLEND | 23.61    | -3,564        | \$841.46-   |          |  |
|           | 544-P08128  | CUI       | 6 X 2990           | 23.61    | -14,352       | \$3,388.51- |          |  |
|           | 544-P08189  | CUI       | 50 X 450           | 23.61    | -22,500       | \$5,312.25- |          |  |
|           | 544-P08190  | CUI       | 50 X 450           | 23.61    | -22,500       | \$5,312.25- |          |  |
|           | 544-P08271  | CUH       | 6/FLOBINS          | 23.61    | -14,352       | \$3,388.51- |          |  |

NET AMOUNT ADJUSTED: \$29,847.77-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM           |          |  |
|-----------|------------|-----------|----------|----------|---------------|--------------|----------|--|
| 01018-001 | ACETONE    |           | *        | LIQ      | 001 GL BLK LB |              |          |  |
| TYP       | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK       | 544-P07954 | CUH       |          | 21.76    | -27,311       | \$5,942.87-  | 13116501 |  |
|           | 544-P08042 | CUI       |          | 21.76    | -10,925       | \$2,377.28-  |          |  |
|           | 544-P08064 | CUH       | 185 DRS  | 21.76    | -67,366       | \$14,658.84- |          |  |
|           | 544-P08240 | CUH       | 61/DRUMS | 21.76    | -22,213       | \$4,833.55-  |          |  |

NET AMOUNT ADJUSTED: \$27,812.54-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01053-003 | N-BUTYL ACETATE | 99%       | *      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P07998      | CUH       |        | 49.19    | -7,480        | \$3,679.41- | 13116501 |  |

NET AMOUNT ADJUSTED: \$3,679.41-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |          |  |
|-----------|--------------|-----------|-------------------|----------|---------------|------------|----------|--|
| 01066-002 | DEQUEST 2000 |           | MSS               | SOLN     | 600 LB DRM EA |            |          |  |
| TYP       | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK       | 544-P08037   | CUI       | MILLER BRWG       | 433.72   | -1            | \$433.72-  | 13116501 |  |
|           | 544-P08126   | CUI       | CHELACLEAN-W13343 | 433.72   | -1            | \$433.72-  |          |  |

NET AMOUNT ADJUSTED: \$867.44-

MCK0062029

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|------------------|-----------|---------------------|----------|------------|------------|-------|--|
| 01076-003            | GLYCOL ETHER DPM | DOWANOL   | MCKS                | LIQ      | 055 GL DRM | EA         |       |  |
| TYP                  | REF-#            | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHU                  |                  | CUI       | SHPD TO BRCH W13548 | 174.75   | +1         | \$174.75   | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |                     |          |            | \$174.75   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------|-----------|---------------------|----------|------------|--------------|----------|--|
| 01081-001            | GLYCOL ETHER EB |           | MSS                 | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#           | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08187      | CUI       | 51 X 415            | 36.87    | -21,588    | \$7,959.50-  | 13116501 |  |
|                      | 544-P08188      | CUI       | 74 X 415 DOW MTL-OC | 36.87    | -30,710    | \$11,322.78- |          |  |
|                      | 544-P08298      | CUH       | 39/CUST DRS         | 36.87    | -39        | \$14.38-     |          |  |
|                      | 544-P08300      | CUH       | 50/RECON DRS        | 36.87    | -21,165    | \$7,803.54-  |          |  |
| NET AMOUNT ADJUSTED: |                 |           |                     |          |            | \$27,100.20- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------|-----------|--------------|----------|------------|--------------|----------|--|
| 01104-008            | GLYCERINE  | 96%       | USP          | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#      | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08124 | CUI       | 1X570-TECH   | 76.87    | -610       | \$468.91-    | 13116501 |  |
|                      | 544-P08125 | CUI       | 85 X 570 USP | 76.87    | -48,450    | \$37,243.52- |          |  |
|                      | 544-P08166 | CUI       | 1 X 570 TECH | 76.87    | -570       | \$438.16-    |          |  |
| NET AMOUNT ADJUSTED: |            |           |              |          |            | \$38,150.59- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------|-----------|-------------------|----------|------------|--------------|----------|--|
| 01104-011            | GLYCERINE  | 99.5%     | USP               | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#      | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08192 | CUH       | 1 DR.             | 78.53    | -570       | \$447.62-    | 13116501 |  |
|                      | 544-P08195 | CUH       | 130               | 78.53    | -74,100    | \$58,190.73- |          |  |
|                      | 544-P08272 | CUH       | 1 TECH DR         | 78.53    | -570       | \$447.62-    |          |  |
|                      | 544-P08273 | CUH       | 70 USP DRS        | 78.53    | -39,900    | \$31,333.47- |          |  |
|                      | 544-P08286 | CUH       | 1 TECH DR FOR USP | 78.53    | -570       | \$447.62-    |          |  |
| NET AMOUNT ADJUSTED: |            |           |                   |          |            | \$90,867.06- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01110-001            | FREON      | TF        | MSS            | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08256 | CUH       | 150/5 GAL CANS | 80.05    | -9,000     | \$7,204.50- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |            | \$7,204.50- |          |  |

MCK0062030

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #     |
|----------------------|--------------------|-----------|---------------|----------|---------------|----|--------------|----------|
| 01113-007            | BORAX PENTAHYDRATE | 5 MOL     | *             | GRAN     | 001 LB BLK LB |    |              |          |
| TYP                  | REF-#              | OPID      | REASON        | AVG-COST | QTY-ADJUST    |    |              |          |
| RPK                  | 544-P08229         | CUH       | 523/100# BAGS | 11.03    | -51,300       |    | \$5,658.39-  | 13116501 |
|                      | 544-P08230         | CUH       | 503/100 BAGS  | 11.03    | -51,040       |    | \$5,629.71-  |          |
| NET AMOUNT ADJUSTED: |                    |           |               |          |               |    | \$11,288.10- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #     |
|----------------------|------------|-----------|----------------|----------|---------------|----|--------------|----------|
| 01120-012            | SODA ASH   | DENSE     | *              | GRAN     | 001 LB BLK LB |    |              |          |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST    |    |              |          |
| RPK                  | 544-P07901 | CUI       | UP77382        | 5.56     | -2,576        |    | \$143.23-    | 13116501 |
|                      | 544-P07901 | CUI       | UP77382        | 5.56     | -99,999       |    | \$5,559.94-  |          |
|                      | 544-P07905 | CUI       | UP77382        | 5.56     | -94,925       |    | \$5,277.83-  |          |
|                      | 544-P08044 | CUI       | 2009 X 50#     | 5.56     | -99,999       |    | \$5,559.94-  |          |
|                      | 544-P08044 | CUI       | 2009 X 50#     | 5.56     | -166          |    | \$9.23-      |          |
|                      | 544-P08045 | CUI       | 955 X 100#     | 5.56     | -95,215       |    | \$5,293.95-  |          |
|                      | 544-P08074 | CUH       | 1941/100# BAGS | 5.56     | -99,950       |    | \$5,557.22-  |          |
|                      | 544-P08074 | CUH       | 1941/100# BAGS | 5.56     | -99,950       |    | \$5,557.22-  |          |
| NET AMOUNT ADJUSTED: |            |           |                |          |               |    | \$32,958.56- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM | AMT-ADJUST  | GL #  |
|----------------------|------------|-----------|----------------------|----------|---------------|----|-------------|-------|
| 01120-015            | SODA ASH   | DENSE     | MCKS                 | GRAN     | 100 LB BAG EA |    |             |       |
| TYP                  | REF-#      | OPID      | REASON               | AVG-COST | QTY-ADJUST    |    |             |       |
| RCS                  | 544-P08045 | CUI       | STAUFFER SDM 3057    | 6.97     | -480          |    | \$3,345.60- | 12492 |
|                      | 544-P08045 | CUH       | SDM/BP 3060/STAUFFER | 6.97     | -400          |    | \$2,788.00- |       |
|                      | 544-P08045 | CUH       | SDM/BP 3058/STAUFFER | 6.97     | -480          |    | \$3,345.60- |       |
| NET AMOUNT ADJUSTED: |            |           |                      |          |               |    | \$9,479.20- |       |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #     |
|----------------------|-------------------|-----------|-----------------------|----------|---------------|----|--------------|----------|
| 01124-070            | HYDROGEN PEROXIDE | 70% TECH  | MSS                   | LIQ      | 001 LB BLK LB |    |              |          |
| TYP                  | REF-#             | OPID      | REASON                | AVG-COST | QTY-ADJUST    |    |              |          |
| RPK                  | 544-P07996        | CUH       |                       | 44.09    | -51,840       |    | \$22,856.26- | 13116501 |
|                      | 544-P08111        | CUI       | DILUTION              | 44.09    | -41,413       |    | \$18,258.99- |          |
|                      | 544-P08202        | CUH       | 7200 GAL DILUTION 50% | 44.09    | -53,184       |    | \$23,448.83- |          |
|                      | 544-P08212        | CUH       | 1000 GALS BULK50%     | 44.09    | -6,440        |    | \$2,839.40-  |          |
| NET AMOUNT ADJUSTED: |                   |           |                       |          |               |    | \$67,403.48- |          |

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD       | FORM     | -PACKAGE--    | UM | AMT-ADJUST | GL #     |
|-----------|-------------------|-----------|------------|----------|---------------|----|------------|----------|
| 01125-001 | HYDROCHLORIC ACID | 20 BE     | *          | LIQ      | 001 LB BLK LB |    |            |          |
| TYP       | REF-#             | OPID      | REASON     | AVG-COST | QTY-ADJUST    |    |            |          |
| RPK       | 544-P07929        | CUH       |            | 3.32     | -16,000       |    | \$531.20-  | 13116501 |
|           | 544-P07999        | CUI       | DIKA BLEND | 3.32     | -3,105        |    | \$103.09-  |          |
|           | 544-P08000        | CUH       |            | 3.32     | -11,928       |    | \$396.01-  |          |
|           | 544-P08006        | CUH       |            | 3.32     | -8,112        |    | \$269.32-  |          |

MCK0062031

DATE: 09/28/84 TIME: 22:41:05 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 09/84

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |           |      |         |             |
|------------|-----|-----------|------|---------|-------------|
| 544-P08054 | CUI | 97 X 140  | 3.32 | -13,580 | \$450.86-   |
| 544-P08129 | CUI | 150 X 500 | 3.32 | -75,000 | \$2,490.00- |

NET AMOUNT ADJUSTED: \$4,240.48-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|-------------------|-----------|------------------------|----------|------------|-------------|----------|--|--|
| 01125-006 | HYDROCHLORIC ACID | 22 BE     | *                      | LIQ      | 001 LB BLK | LB          |          |  |  |
| TYP       | REF-#             | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P07982        | CUH       |                        | 3.65     | -66,667    | \$2,433.35- | 13116501 |  |  |
|           | 544-P07982        | CUH       |                        | 3.65     | -66,666    | \$2,433.31- |          |  |  |
|           | 544-P07982        | CUH       |                        | 3.65     | -66,666    | \$2,433.31- |          |  |  |
|           | 544-P08020        | CUH       |                        | 3.65     | -98,300    | \$3,587.95- |          |  |  |
|           | 544-P08123        | CUI       | DILUTION               | 3.65     | -50,000    | \$1,825.00- |          |  |  |
|           | 544-P08123        | CUI       | DILUTION               | 3.65     | -50,000    | \$1,825.00- |          |  |  |
|           | 544-P08183        | CUI       | BLEND                  | 3.65     | -98,300    | \$3,587.95- |          |  |  |
|           | 544-P08316        | CUH       | 11300 GALS BULK HCL 20 | 3.65     | -98,300    | \$3,587.95- |          |  |  |

NET AMOUNT ADJUSTED: \$21,713.82-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |       |  |  |
|-----------|-------------------|-----------|-----------------------|----------|------------|------------|-------|--|--|
| 01125-012 | HYDROCHLORIC ACID | 20 BE     | MCKS                  | LIQ      | 015 GL CBY | EA         |       |  |  |
| TYP       | REF-#             | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD       |                   | CUI       | PHYS ADJ-TRIED TO SHP | 8.77     | -26        | \$228.02-  | 59417 |  |  |

NET AMOUNT ADJUSTED: \$228.02-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|------------|-----------|---------------|----------|------------|-------------|----------|--|--|
| 01132-001 | METHANOL   |           | *             | LIQ      | 001 GL BLK | LB          |          |  |  |
| TYP       | REF-#      | OPID      | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P08034 | CUI       |               | 8.67     | -36,516    | \$3,165.94- | 13116501 |  |  |
|           | 544-P08120 | CUI       | 300 X 358     | 8.67     | -99,999    | \$8,669.91- |          |  |  |
|           | 544-P08120 | CUI       | 300 X 8120    | 8.67     | -7,401     | \$641.67-   |          |  |  |
|           | 544-P08274 | CUH       | 100/RECON DRS | 8.67     | -36,516    | \$3,165.94- |          |  |  |

NET AMOUNT ADJUSTED: \$15,643.46-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM         |       |  |  |
|-----------|-----------|-----------|--------------|----------|------------|------------|-------|--|--|
| 01132-002 | METHANOL  |           | MCKS         | LIQ      | 054 GL DRM | EA         |       |  |  |
| TYP       | REF-#     | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD       |           | CUI       | FRM 01132006 | 46.92    | +20        | \$938.40   | 59417 |  |  |

NET AMOUNT ADJUSTED: \$938.40

MCK0062032

PGM: CK02L21P VER 01.4  
DATE: 09/28/84 TIME: 22:41:05

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
09/84

REPORT NO: CK02R25A PAGE: 6  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                      | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-----------|-----------|---------------------------|----------|------------|-------------|-------|--|
| 01132-006            | METHANOL  |           | MCKS                      | LIQ      | 054 GL NDM | EA          |       |  |
| TYP                  | REF-#     | OPID      | REASON                    | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |           | CUI       | C-01132002-DRS N BAD COND | 59.80    | -20        | \$1,196.00- | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                           |          |            | \$1,196.00- |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|------------------------|----------|------------|-------------|----------|--|
| 01143-002            | SODIUM GLUCONATE |           | *                      | FINE     | 050 LB BAG | EA          |          |  |
| TYP                  | REF-#            | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08002       | CUI       | GLUCNTE-INTL EX        | 28.49    | -12        | \$341.88-   | 13116501 |  |
|                      | 544-P08037       | CUI       | MILLER BRWG            | 28.49    | -10        | \$284.90-   |          |  |
|                      | 544-P08126       | CUI       | CHELACLEAN-W13343      | 28.49    | -7         | \$199.43-   |          |  |
|                      | 544-P08176       | CUI       | INTL EX W13374         | 28.49    | -12        | \$341.88-   |          |  |
|                      | 544-P08209       | CUH       | 40750# BULK CHELACLEAN | 28.49    | -7         | \$199.43-   |          |  |
| NET AMOUNT ADJUSTED: |                  |           |                        |          |            | \$1,367.52- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------------------|-----------|-----------|----------|------------|------------|-------|--|
| 01154-007            | SODIUM SULFATE ANHYDROUS |           | MCKS      | GRAN     | 100 LB BAG | EA         |       |  |
| TYP                  | REF-#                    | OPID      | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                          | CUI       | PHYS ADJ- | 7.36     | +98        | \$721.28   | 59417 |  |
| NET AMOUNT ADJUSTED: |                          |           |           |          |            | \$721.28   |       |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------------------|-----------|----------------|----------|------------|--------------|----------|--|
| 01154-010            | SODIUM SULFATE ANHYDROUS | ANHYD     | *              | GRAN     | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#                    | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08027               | CUH       | 1805/100# BAGS | 6.01     | -98,330    | \$5,909.63-  | 13116501 |  |
|                      | 544-P08027               | CUH       | 1805/100 BAGS  | 6.01     | -98,330    | \$5,909.63-  |          |  |
| NET AMOUNT ADJUSTED: |                          |           |                |          |            | \$11,819.26- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|----------|----------|------------|-------------|----------|--|
| 01158-027            | SODIUM SILICATE | N         | *        | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08178      | CUI       | 75 X 635 | 6.22     | -46,410    | \$2,886.70- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |          |          |            | \$2,886.70- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01158-044            | SODIUM SILICATE | N         | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | RCD IPO 8178 WRNG | 60.21    | +2         | \$120.42   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$120.42   |       |  |

MCK0062033

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD            | FORM | -PACKAGE--    | UM         |              |          |  |
|----------------------|---------------------|-----------|-----------------|------|---------------|------------|--------------|----------|--|
| 01162-001            | METHYL ETHYL KETONE |           | *               | LIQ  | 001 GL BLK LB |            |              |          |  |
| TYP                  | REF-#               | OPID      | REASON          |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08050          | CUI       | 40 X 33#        |      | 31.85         | -1,346     | \$428.70-    | 13116501 |  |
|                      | 544-P08052          | CUI       | 60 X 36#        |      | 31.85         | -22,399    | \$7,134.08-  |          |  |
|                      | 544-P08083          | CUH       | 20/SANBAR BLEND |      | 31.85         | -382       | \$121.67-    |          |  |
|                      | 544-P08224          | CUH       |                 |      | 31.85         | -37,332    | \$11,890.24- |          |  |
| NET AMOUNT ADJUSTED: |                     |           |                 |      |               |            | \$19,574.69- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD   | FORM | -PACKAGE--    | UM         |             |          |  |
|----------------------|------------------|------------|--------|------|---------------|------------|-------------|----------|--|
| 01170-003            | MONOETHANOLAMINE | LOW FREEZE | *      | LIQ  | 001 LB BLK LB |            |             |          |  |
| TYP                  | REF-#            | OPID       | REASON |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P07955       | CUH        |        |      | 32.90         | -7,540     | \$2,480.66- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |            |        |      |               |            | \$2,480.66- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM | -PACKAGE--    | UM         |             |          |  |
|----------------------|------------------|-----------|--------|------|---------------|------------|-------------|----------|--|
| 01170-006            | MONOETHANOLAMINE |           | *      | LIQ  | 001 LB BLK LB |            |             |          |  |
| TYP                  | REF-#            | OPID      | REASON |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P07956       | CUH       |        |      | 38.70         | -20,060    | \$7,763.22- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |      |               |            | \$7,763.22- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD          | FORM | -PACKAGE--    | UM         |              |          |  |
|----------------------|-----------------|-----------|---------------|------|---------------|------------|--------------|----------|--|
| 01172-001            | PHOSPHORIC ACID | 75%       | *             | LIQ  | 001 GL BLK LB |            |              |          |  |
| TYP                  | REF-#           | OPID      | REASON        |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08086      | CUH       | 100/700# DRS  |      | 26.54         | -70,000    | \$18,578.00- | 13116501 |  |
|                      | 544-P08259      | CUH       | 50/POLY DRUMS |      | 26.54         | -35,000    | \$9,289.00-  |          |  |
| NET AMOUNT ADJUSTED: |                 |           |               |      |               |            | \$27,867.00- |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD     | FORM | -PACKAGE--    | UM         |             |          |  |
|----------------------|-------------|-----------|----------|------|---------------|------------|-------------|----------|--|
| 01189-001            | NITRIC ACID | 42 BE     | *        | LIQ  | 001 GL BLK LB |            |             |          |  |
| TYP                  | REF-#       | OPID      | REASON   |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P07973  | CUH       |          |      | 8.88          | -6,630     | \$588.74-   | 13116501 |  |
|                      | 544-P07974  | CUH       |          |      | 8.88          | -1,615     | \$143.41-   |          |  |
|                      | 544-P08151  | CUI       | 20 X 600 |      | 8.88          | -12,000    | \$1,065.60- |          |  |
|                      | 544-P08155  | CUI       | 11 X 170 |      | 8.88          | -1,870     | \$166.06-   |          |  |
| NET AMOUNT ADJUSTED: |             |           |          |      |               |            | \$1,963.81- |          |  |

MCK0062034

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM |            |  |          |
|----------------------|-------------|-----------|----------|----------|------------|----|------------|--|----------|
| 01189-004            | NITRIC ACID | 38 BE     | *        | LIQ      | 001 LB BLK | LB |            |  |          |
| TYP                  | REF-#       | OPID      | REASON   | AVG-COST | QTY-ADJUST |    | AMT-ADJUST |  | GL #     |
| RPK                  | 544-P08153  | CUI       | 32 X 90# | 6.42     | -2,880     |    | \$184.90-  |  | 13116501 |
|                      | 544-P08154  | CUI       | 5 X 600  | 6.42     | -3,000     |    | \$192.60-  |  |          |
| NET AMOUNT ADJUSTED: |             |           |          |          |            |    | \$377.50-  |  |          |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM |            |  |       |
|----------------------|-------------|-----------|----------|----------|------------|----|------------|--|-------|
| 01189-011            | NITRIC ACID | 42 BE     | MCKS     | LIQ      | 008 GL RDM | EA |            |  |       |
| TYP                  | REF-#       | OPID      | REASON   | AVG-COST | QTY-ADJUST |    | AMT-ADJUST |  | GL #  |
| OHD                  |             | CUI       | PHYS ADJ | 11.56    | -8         |    | \$92.48-   |  | 59417 |
| NET AMOUNT ADJUSTED: |             |           |          |          |            |    | \$92.48-   |  |       |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM |             |  |          |
|----------------------|-------------------|-----------|-----------|----------|------------|----|-------------|--|----------|
| 01212-005            | PERCHLOROETHYLENE |           | *         | LIQ      | 001 LB BLK | LB |             |  |          |
| TYP                  | REF-#             | OPID      | REASON    | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK                  | 544-P07963        | CUH       |           | 28.95    | -2,904     |    | \$840.71-   |  | 13116501 |
|                      | 544-P08100        | CUI       | FLOKEM #2 | 28.95    | -1,430     |    | \$413.99-   |  |          |
| NET AMOUNT ADJUSTED: |                   |           |           |          |            |    | \$1,254.70- |  |          |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |              |  |          |
|----------------------|-----------------|-----------|--------|----------|------------|----|--------------|--|----------|
| 01224-001            | HEXYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK | LB |              |  |          |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST   |  | GL #     |
| RPK                  | 544-P08005      | CUH       |        | 60.79    | -22,947    |    | \$13,949.48- |  | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            |    | \$13,949.48- |  |          |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |             |  |          |
|----------------------|-----------------|-----------|--------|----------|------------|----|-------------|--|----------|
| 01225-001            | ETHYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK | LB |             |  |          |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK                  | 544-P08013      | CUH       |        | 24.36    | -25,950    |    | \$6,321.42- |  | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            |    | \$6,321.42- |  |          |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |             |  |          |
|----------------------|--------------------|-----------|--------|----------|------------|----|-------------|--|----------|
| 01226-004            | DIPROPYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK | LB |             |  |          |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK                  | 544-P07971         | CUH       |        | 43.05    | -16,980    |    | \$7,309.89- |  | 13116501 |
| NET AMOUNT ADJUSTED: |                    |           |        |          |            |    | \$7,309.89- |  |          |

MCK0062035

DATE: 09/28/84 TIME: 22:41:05 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G05

09/84

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|--------------------|-----------|---------------------|----------|---------------|--------------|----------|--|
| 01229-003            | METHYLENE CHLORIDE |           | *                   | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#              | OPID      | REASON              | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08003         | CUI       | GRUMMAN BLEND       | 32.50    | -7,817        | \$2,540.53-  | 13116501 |  |
|                      | 544-P08100         | CUI       | FLOKEM. #2          | 32.50    | -2,236        | \$726.70-    |          |  |
|                      | 544-P08105         | CUH       | 20 DRSGRUMMAN BLEND | 32.50    | -7,963        | \$2,587.98-  |          |  |
|                      | 544-P08193         | CUH       | 94 RECON DRS        | 32.50    | -57,528       | \$18,696.60- |          |  |
| NET AMOUNT ADJUSTED: |                    |           |                     |          |               | \$24,551.81- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------|-----------|----------|----------|---------------|-------------|----------|--|
| 01233-001            | XYLENE     |           | *        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08177 | CUI       | 50 X 390 | 22.16    | -19,890       | \$4,407.62- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |               | \$4,407.62- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------|-----------|----------|----------|---------------|-------------|----------|--|
| 01236-002            | TOLUENE    |           | *        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P07983 | CUH       |          | 20.68    | -1,798        | \$371.83-   | 13116501 |  |
|                      | 544-P08179 | CUI       | 40 X 390 | 20.68    | -15,912       | \$3,290.60- |          |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |               | \$3,662.43- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|-------------------|-----------|----------------|----------|---------------|------------|-------|--|
| 01238-001            | ISOPROPYL ALCOHOL | 99%       | *              | LIQ      | 001 LB BLK LB |            |       |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| DMD                  |                   | CUI       | OVERFILL TRUCK | 24.71    | -197          | \$48.68-   | 59412 |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |               | \$48.68-   |       |  |

| TYP                  | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
|----------------------|------------|------|-----------------|----------|------------|--------------|----------|--|
| RPK                  | 544-P07880 | CUH  |                 | 24.71    | -7,242     | \$1,789.50-  | 13116501 |  |
|                      | 544-P08014 | CUH  |                 | 24.71    | -7,242     | \$1,789.50-  |          |  |
|                      | 544-P08083 | CUH  | 20/SANBAR BLEND | 24.71    | -817       | \$201.88-    |          |  |
|                      | 544-P08227 | CUH  | 100 RECON DRS   | 24.71    | -35,500    | \$8,772.05-  |          |  |
| NET AMOUNT ADJUSTED: |            |      |                 |          |            | \$12,552.93- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01245-011            | TRIETHANOLAMINE | 85%       | *      | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P07957      | CUH       |        | 40.50    | -18,560       | \$7,516.80- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$7,516.80- |          |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|----------|----------|------------|--------------|----------|--|
| 01260-009            | 1,1,1 TRICHLOROETHANE | CHLORO SM | MSS      | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P07983            | CUH       |          | 37.95    | -4,979     | \$1,889.53-  | 13116501 |  |
|                      | 544-P08084            | CUH       | 51 DRS   | 37.95    | -30,795    | \$11,686.70- |          |  |
|                      | 544-P08208            | CUH       | 50 DRUMS | 37.95    | -30,192    | \$11,457.86- |          |  |
| NET AMOUNT ADJUSTED: |                       |           |          |          |            | \$25,034.09- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|-----------------|----------|------------|--------------|----------|--|
| 01260-022            | 1,1,1 TRICHLOROETHANE | VDG       | *               | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08083            | CUH       | 20/SANBAR BLEND | 37.78    | -9,016     | \$3,406.24-  | 13116501 |  |
|                      | 544-P08206            | CUH       | 50 DRS.         | 37.78    | -30,192    | \$11,406.54- |          |  |
| NET AMOUNT ADJUSTED: |                       |           |                 |          |            | \$14,812.78- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|--|
| 01265-001            | STYRENE MONOMER |           | *      | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08015      | CUH       |        | 34.84    | -7,260     | \$2,529.38- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$2,529.38- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|----------|----------|------------|-------------|----------|--|
| 01281-005            | NEODOL     | 25-7      | *        | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08051 | CUI       | 18 X 440 | 47.26    | -8,410     | \$3,974.57- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |            | \$3,974.57- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|--------|----------|------------|-------------|----------|--|
| 01281-009            | NEODOL     | 25-3      | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08055 | CUI       |        | 52.32    | -7,760     | \$4,060.03- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |            | \$4,060.03- |          |  |

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM          |          |  |
|-----------|--------------|-----------|---------------|----------|------------|-------------|----------|--|
| 01282-020 | CAUSTIC SODA |           | *             | BEAD     | 001 LB BLK | LB          |          |  |
| TYP       | REF-#        | OPID      | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P07961   | CUH       |               | 16.44    | -36,000    | \$5,918.40- | 13116501 |  |
|           | 544-P07962   | CUH       |               | 16.44    | -40,000    | \$6,576.00- |          |  |
|           | 544-P07963   | CUI       | DUBOIS DR     | 16.44    | -40,000    | \$6,576.00- |          |  |
|           | 544-P07988   | CUH       |               | 16.44    | -15,000    | \$2,466.00- |          |  |
|           | 544-P08057   | CUH       | 80/FLOKEM DRS | 16.44    | -40,000    | \$6,576.00- |          |  |
|           | 544-P08058   | CUI       | 80 X 500 BOLL | 16.44    | -40,000    | \$6,576.00- |          |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                           |       |         |             |
|------------|-----|---------------------------|-------|---------|-------------|
| 544-P08071 | CUH | 10 FARBEST BINS/VMC 73116 | 16.44 | -32,000 | \$5,260.80- |
| 544-P08136 | CUH | 80/BOLL/VMC 73118         | 16.44 | -40,000 | \$6,576.00- |
| 544-P08138 | CUI | 16 X 500 FIBRE            | 16.44 | -8,000  | \$1,315.20- |
| 544-P08243 | CUH | 19 VULCANFIBRE/73121      | 16.44 | -9,500  | \$1,561.80- |
| 544-P08247 | CUH | 80 FLOKEM/VMC 73122       | 16.44 | -40,000 | \$6,576.00- |
| 544-P08279 | CUH | 84/FLOKEM DRS/VMC 73123   | 16.44 | -42,000 | \$6,904.80- |
| 544-P08289 | CUH | 80 MCGEAN/VMC #73124      | 16.44 | -40,000 | \$6,576.00- |

NET AMOUNT ADJUSTED: \$69,459.00-

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|--------------|-----------|--------------------|----------|------------|------------|----------|--|
| 01282-051            | CAUSTIC SODA | CONSIGNED | *                  | BEAD     | 001 LB BLK | LB         |          |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| OHD                  |              | CUI       | P08137/73118       | 0.01     | -40,000    | \$4.00-    | 59417    |  |
|                      |              | CUI       | VMC 73122 6408247  | 0.01     | -40,000    | \$4.00-    |          |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$8.00-    |          |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RCS                  | 544-P08026   | CUI       | VMC 73112-ECON     | 0.01     | -52,960    | \$5.30-    | 12492    |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$5.30-    |          |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P07948   | CUH       |                    | 0.01     | -45,000    | \$4.50-    | 13116501 |  |
|                      | 544-P07949   | CUH       |                    | 0.01     | -34,000    | \$3.40-    |          |  |
|                      | 544-P08113   | CUH       | VMC 73113          | 0.01     | -45,000    | \$4.50-    |          |  |
|                      | 544-P08263   | CUH       | 79/GREEN/VMC 73117 | 0.01     | -39,500    | \$3.95-    |          |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$16.35-   |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01282-052            | CAUSTIC SODA | CONSIGNED | MCKS              | BEAD     | 500 LB DRM | EA         |       |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |              | CUI       | VMC73108          | 0.05     | -80        | \$4.00-    | 59417 |  |
|                      |              | CUI       | VMC 73109         | 0.05     | -80        | \$4.00-    |       |  |
|                      |              | CUI       | VMC 73118-RP08137 | 0.05     | -80        | \$4.00-    |       |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |            | \$12.00-   |       |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P07603   | CUI       | 73117-CUST CHEM   | 0.05     | -80        | \$4.00-    | 12492 |  |
|                      | 544-P07603   | CUH       | 80 BILL/73120     | 0.05     | -80        | \$4.00-    |       |  |
|                      | 544-P07949   | CUI       | RSR 73115         | 0.05     | -68        | \$3.40-    |       |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |            | \$11.40-   |       |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|-----------|----------|------------|------------|-------|--|
| 01282-053            | CAUSTIC SODA | CONSIGNED | CUST      | BEAD     | 001 EA     | PTK EA     |       |  |
| TYP                  | REF-#        | OPID      | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P07923   | CUI       | VMC 73110 | 0.30     | -15        | \$4.50-    | 12492 |  |
|                      | 544-P07948   | CUH       | VMC 73114 | 0.30     | -15        | \$4.50-    |       |  |
|                      | 544-P07948   | CUH       | VMC 73100 | 0.30     | -15        | \$4.50-    |       |  |
| NET AMOUNT ADJUSTED: |              |           |           |          |            | \$13.50-   |       |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|----------|----------|------------|-------------|----------|--|
| 01289-013            | TERGITOL   | NP-9      | *        | LIQ      | 001 GL     | BLK LB      |          |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08063 | CUI       | 18 X 484 | 35.50    | -9,240     | \$3,280.20- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |            | \$3,280.20- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|--------------|-----------|--------|----------|------------|-------------|----------|--|
| 01316-001            | TRITON N-101 |           | *      | LIQ      | 001 GL     | BLK LB      |          |  |
| TYP                  | REF-#        | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08036   | CUI       |        | 39.00    | -24,000    | \$9,360.00- | 13116501 |  |
| NET AMOUNT ADJUSTED: |              |           |        |          |            | \$9,360.00- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------|-----------|--------|----------|------------|--------------|----------|--|
| 01336-001            | TRITON X-100 |           | *      | LIQ      | 001 GL     | BLK LB       |          |  |
| TYP                  | REF-#        | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08032   | CUI       |        | 61.14    | -4,800     | \$2,934.72-  | 13116501 |  |
|                      | 544-P08035   | CUI       |        | 61.14    | -36,000    | \$22,010.40- |          |  |
| NET AMOUNT ADJUSTED: |              |           |        |          |            | \$24,945.12- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|--------------|-----------|-------------------------|----------|------------|-------------|-------|--|
| 01336-003            | TRITON X-100 |           | MCKS                    | LIQ      | 055 GL     | DRM EA      |       |  |
| TYP                  | REF-#        | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |              | CUI       | CORRECT PREV CORRECTION | 314.14   | +10        | \$3,141.40  | 59417 |  |
|                      |              | CUI       | IPO ENTO IN ERROR       | 314.14   | -10        | \$3,141.40- |       |  |
| NET AMOUNT ADJUSTED: |              |           |                         |          |            | \$0.00      |       |  |

| PROD-CD   | PROD-NAME     | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM          |          |  |
|-----------|---------------|-----------|--------------|----------|------------|-------------|----------|--|
| 01361-001 | SULFURIC ACID | 66 BE     | *            | LIQ      | 001 LB     | BLK LB      |          |  |
| TYP       | REF-#         | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P07952    | CUH       |              | 2.14     | -23,850    | \$510.39-   | 13116501 |  |
|           | 544-P07953    | CUH       |              | 2.14     | -65,800    | \$1,408.12- |          |  |
|           | 544-P08106    | CUH       | 75 DRS       | 2.14     | -52,500    | \$1,123.50- |          |  |
|           | 544-P08107    | CUI       | 135 X 225    | 2.14     | -30,375    | \$650.03-   |          |  |
|           | 544-P08239    | CUH       | 125/700# DRS | 2.14     | -87,500    | \$1,872.50- |          |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

544-P08270 CUH 277 POLY DRS 2.14 -62,325 \$1,333.76-

NET AMOUNT ADJUSTED: \$6,898.30-

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|---------------|-----------|--------------|----------|---------------|--------------|----------|--|
| 01361-002            | SULFURIC ACID | 96%       | *            | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#         | OPID      | REASON       | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P07995    | CUH       |              | 2.03     | -90,000       | \$1,827.00-  | 13116501 |  |
|                      | 544-P07995    | CUH       |              | 2.03     | -90,000       | \$1,827.00-  |          |  |
|                      | 544-P08211    | CUI       | TRNSFR TO 66 | 2.03     | -99,999       | \$2,029.98-  |          |  |
|                      | 544-P08211    | CUI       | TRNSFR TO 66 | 2.03     | -99,999       | \$2,029.98-  |          |  |
|                      | 544-P08211    | CUI       | TRNSFR TO 66 | 2.03     | -99,999       | \$2,029.98-  |          |  |
|                      | 544-P08315    | CUH       | BULK 66      | 2.03     | -99,000       | \$2,009.70-  |          |  |
| NET AMOUNT ADJUSTED: |               |           |              |          |               | \$11,753.64- |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|----------------------|-----------|---------------------|----------|---------------|------------|-------|--|
| 01377-001            | CAUSTIC SODA, LIQUID | 50%       | *                   | LIQ      | 001 GL BLK LB |            |       |  |
| TYP                  | REF-#                | OPID      | REASON              | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH                   |                      | CUI       | CRCT DRW DWN 7912   | 7.19     | +1,341        | \$96.42    | 59417 |  |
|                      |                      | CUI       | CRCT RCT OF RP08009 | 7.19     | +200          | \$14.38    |       |  |
| NET AMOUNT ADJUSTED: |                      |           |                     |          |               | \$110.80   |       |  |

| TYP | REF-#      | OPID | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
|-----|------------|------|------------------------|----------|------------|-------------|----------|--|
| RPK | 544-P07926 | CUH  |                        | 7.19     | -14,179    | \$1,019.47- | 13116501 |  |
|     | 544-P07951 | CUH  |                        | 7.19     | -10,322    | \$742.15-   |          |  |
|     | 544-P08002 | CUI  | GLUCNTE-INTL EX        | 7.19     | -18,191    | \$1,307.93- |          |  |
|     | 544-P08012 | CUI  | SEE W13110             | 7.19     | -2,167     | \$155.81-   |          |  |
|     | 544-P08016 | CUH  |                        | 7.19     | -34,895    | \$2,508.95- |          |  |
|     | 544-P08017 | CUH  |                        | 7.19     | -24,426    | \$1,756.23- |          |  |
|     | 544-P08037 | CUI  | MILLER BRWG            | 7.19     | -19,562    | \$1,406.51- |          |  |
|     | 544-P08049 | CUI  | NI IND-W13199          | 7.19     | -22,203    | \$1,596.40- |          |  |
|     | 544-P08056 | CUH  | 41340 BULK BLEACH      | 7.19     | -11,795    | \$848.06-   |          |  |
|     | 544-P08066 | CUH  | 200/680# DRS           | 7.19     | -69,789    | \$5,017.83- |          |  |
|     | 544-P08082 | CUH  | C.SODA/LIME BLEND      | 7.19     | -18,749    | \$1,348.05- |          |  |
|     | 544-P08104 | CUH  | 7340# BLEACH           | 7.19     | -2,297     | \$165.15-   |          |  |
|     | 544-P08126 | CUI  | CHELACLEAN-W13343      | 7.19     | -17,324    | \$1,245.60- |          |  |
|     | 544-P08127 | CUI  | NORRIS W13328          | 7.19     | -21,863    | \$1,571.95- |          |  |
|     | 544-P08149 | CUH  | 2500 G/BLEACH/NI IND   | 7.19     | -5,903     | \$424.43-   |          |  |
|     | 544-P08157 | CUI  | 30%-GM-W13361          | 7.19     | -12,867    | \$925.14-   |          |  |
|     | 544-P08169 | CUI  | 10% VAR 8157           | 7.19     | -1         | \$0.07-     |          |  |
|     | 544-P08175 | CUI  | 20X560 20%             | 7.19     | -2,299     | \$165.30-   |          |  |
|     | 544-P08176 | CUI  | INTL EXT W13374        | 7.19     | -18,843    | \$1,354.81- |          |  |
|     | 544-P08180 | CUI  | 100 X 680              | 7.19     | -34,895    | \$2,508.95- |          |  |
|     | 544-P08191 | CUH  | 100 ACT II POLY        | 7.19     | -34,895    | \$2,508.95- |          |  |
|     | 544-P08209 | CUH  | 40750# BULK CHELACLEAN | 7.19     | -18,961    | \$1,363.30- |          |  |
|     | 544-P08291 | CUH  | 3000 GALS. LIME        | 7.19     | -17,201    | \$1,236.75- |          |  |
|     | 544-P08303 | CUH  | 60/ACT POLY            | 7.19     | -3,900     | \$280.41-   |          |  |
|     | 544-P08304 | CUH  | 100 POLY DRS           | 7.19     | -34,895    | \$2,508.95- |          |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

544-P08305 CUH 87/STEEL DRS 7.19 -30,358 \$2,182.74-

NET AMOUNT ADJUSTED: \$36,149.89-

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|----------------------|-----------|---------|----------|------------|-------------|----------|--|
| 01377-004            | CAUSTIC SODA, LIQUID | 50% M.C.  | *       | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#                | OPID      | REASON  | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P08207           | CUH       | 100 DRS | 9.62     | -34,895    | \$3,356.90- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                      |           |         |          |            | \$3,356.90- |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|----------------------|-----------|--------------------------|----------|------------|-------------|-------|--|
| 01377-005            | CAUSTIC SODA, LIQUID | 50%       | MCKS                     | LIQ      | 055 GL RDM | EA          |       |  |
| TYP                  | REF-#                | OPID      | REASON                   | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| OHD                  |                      | CUI       | CORRECTION - SEE EXPLNTN | 42.39    | -32        | \$1,356.48- | 59417 |  |
| NET AMOUNT ADJUSTED: |                      |           |                          |          |            | \$1,356.48- |       |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|----------------------|-----------|--------------------|----------|------------|-------------|-------|--|
| 01377-006            | CAUSTIC SODA, LIQUID | 50%       | MCKS               | LIQ      | 055 GL RDM | EA          |       |  |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| INT                  |                      | CUI       | NEUTRALIZATION PIT | 48.52    | -5         | \$242.60-   | 73550 |  |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$242.60-   |       |  |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| OHD                  |                      | CUI       | PHYS ADJ           | 48.52    | -26        | \$1,261.52- | 59417 |  |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$1,261.52- |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------------|------------|----------|----------|------------|--------------|----------|--|
| 01391-005            | CHELATING AGENTS | VERSNE 100 | *        | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#            | OPID       | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P08053       | CUI        |          | 30.83    | -11,030    | \$3,400.55-  | 13116501 |  |
|                      | 544-P08152       | CUI        | 72 X 600 | 30.83    | -43,520    | \$13,417.22- |          |  |
| NET AMOUNT ADJUSTED: |                  |            |          |          |            | \$16,817.77- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|--------|----------|------------|-------------|----------|--|
| 01438-001            | N-PROPANOL |           | *      | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P07997 | CUH       |        | 41.92    | -6,700     | \$2,808.64- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |            | \$2,808.64- |          |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|----------|----------|------------|-------------|----------|--|
| 01532-001            | ISOBUTYL ACETATE |           | *        | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P08065       | CUI       | 18 X 397 | 42.25    | -7,440     | \$3,143.40- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |          |          |            | \$3,143.40- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM        |          |  |
|----------------------|------------------|-----------|-----------------|----------|------------|-----------|----------|--|
| 01532-003            | ISOBUTYL ACETATE | 99Z       | MCKS            | LIQ      | 055 GL DRM | EA        |          |  |
| TYP                  | REF-#            | OPID      | REASON          | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |  |
| RPK                  | 544-P08083       | CUH       | 20/SANBAR BLEND | 188.67   | -1         | \$188.67- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |                 |          |            | \$188.67- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|----------------|----------|------------|--------------|----------|--|
| 01571-001            | CAUSTIC POTASH LIQUID | 50Z       | *              | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P08011            | CUI       |                | 17.01    | -42,078    | \$7,157.47-  | 13116501 |  |
|                      | 544-P08225            | CUH       | 50 RECON DRS   | 17.01    | -29,700    | \$5,051.97-  |          |  |
|                      | 544-P08226            | CUH       | 100 POLY DRS   | 17.01    | -59,400    | \$10,103.94- |          |  |
|                      | 544-P08228            | CUH       | 1000 GALS BULK | 17.01    | -10,990    | \$1,869.40-  |          |  |
|                      | 544-P08241            | CUH       | 4000 GAL BULK  | 17.01    | -42,168    | \$7,172.78-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$31,355.56- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM        |          |  |
|----------------------|------------|-----------|-----------------|----------|------------|-----------|----------|--|
| 01675-002            | HEPTANES   |           | MCKS            | LIQ      | 055 GL DRM | EA        |          |  |
| TYP                  | REF-#      | OPID      | REASON          | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |  |
| RPK                  | 544-P08083 | CUH       | 20/SANBAR BLEND | 82.43    | -1         | \$82.43-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                 |          |            | \$82.43-  |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|-------------|-----------|--------------------|----------|------------|-----------|-------|--|
| 01676-002            | HEPTANES LR |           | MCKS               | LIQ      | 055 GL DRM | EA        |       |  |
| TYP                  | REF-#       | OPID      | REASON             | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| SCR                  |             | CUI       | DISPOSED OF-SYSTCH | 89.85    | -1         | \$89.85-  | 59412 |  |
| NET AMOUNT ADJUSTED: |             |           |                    |          |            | \$89.85-  |       |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM        |          |  |
|----------------------|------------------------|-----------|-----------|----------|------------|-----------|----------|--|
| 01695-002            | MINERAL SPIRITS, SHORT |           | MCKS      | LIQ      | 055 GL DRM | EA        |          |  |
| TYP                  | REF-#                  | OPID      | REASON    | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |  |
| RPK                  | 544-P08100             | CUI       | FLOKEM #2 | 74.43    | -7         | \$521.01- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                        |           |           |          |            | \$521.01- |          |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME                 | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|---------------------------|-----------|---------------|----------|------------|-------------|----------|--|
| 01696-002            | MINERAL SPIRITS, ODORLESS |           | MCKS          | LIQ      | 055 GL     | DRM EA      |          |  |
| TYP                  | REF-#                     | OPID      | REASON        | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P08003                | CUI       | GRUNMAN BLEND | 110.13   | -7         | \$770.91-   | 13116501 |  |
|                      | 544-P08105                | CUH       | 20 DRS        | 110.13   | -7         | \$770.91-   |          |  |
| NET AMOUNT ADJUSTED: |                           |           |               |          |            | \$1,541.82- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|-----------|-----------|------------------------|----------|------------|-----------|-------|--|
| 01699-001            | KEROSENE  | 450       | *                      | LIQ      | 001 GL     | BLK LB    |       |  |
| TYP                  | REF-#     | OPID      | REASON                 | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH                   |           | CUI       | CRCT P07983-NO DRW DWN | 16.50    | -4,149     | \$684.59- | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                        |          |            | \$684.59- |       |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------|-----------|--------|----------|------------|--------------|----------|--|
| 01724-002            | DALPAD A   |           | *      | LIQ      | 001 GL     | BLK LB       |          |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P07969 | CUH       |        | 57.60    | -17,782    | \$10,242.43- | 13116501 |  |
|                      | 544-P07970 | CUH       |        | 57.60    | -5,158     | \$2,971.01-  |          |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |            | \$13,213.44- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|-----------|-----------|---------------------|----------|------------|-----------|-------|--|
| 01807-002            | MCKSOLV T |           | MCKS                | LIQ      | 055 GL     | DRM EA    |       |  |
| TYP                  | REF-#     | OPID      | REASON              | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| SCR                  |           | CUI       | DISPOSED OF-SYSTech | 102.23   | -1         | \$102.23- | 59412 |  |
| NET AMOUNT ADJUSTED: |           |           |                     |          |            | \$102.23- |       |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|----------------------|-----------|-----------------------|----------|------------|-----------|-------|--|
| 01814-001            | LACQUER THINNER 28-X |           | MCKS                  | LIQ      | 055 GL     | DRM EA    |       |  |
| TYP                  | REF-#                | OPID      | REASON                | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| SCR                  |                      | CUI       | DISPOSED OF - SYSTECH | 115.42   | -1         | \$115.42- | 59412 |  |
| NET AMOUNT ADJUSTED: |                      |           |                       |          |            | \$115.42- |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|--------------|-----------|---------------------|----------|------------|-----------|-------|--|
| 01824-001            | SPARKS SG-34 |           | MCKS                | LIQ      | 055 GL     | DRM EA    |       |  |
| TYP                  | REF-#        | OPID      | REASON              | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| SCR                  |              | CUI       | DISPOSED OF-SYSTech | 110.40   | -2         | \$220.80- | 59412 |  |
| NET AMOUNT ADJUSTED: |              |           |                     |          |            | \$220.80- |       |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM         |          |  |
|----------------------|-------------|-----------|------------------------|----------|---------------|------------|----------|--|
| 02398-001            | LIME SLURRY | 40-42%    | *                      | LIQ      | 001 GL BLK LB |            |          |  |
| TYP                  | REF-#       | OPID      | REASON                 | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P08049  | CUI       | NI IND. W13199         | 1.65     | -5,232        | \$86.33-   | 13116501 |  |
|                      | 544-P08082  | CUH       | C.SODA/LIME BLEND      | 1.65     | -3,924        | \$64.75-   |          |  |
|                      | 544-P08127  | CUI       | NORRIS W13328          | 1.65     | -4,905        | \$80.93-   |          |  |
|                      | 544-P08291  | CUH       | 3000 GALS CAUSTIC/LIME | 1.65     | -3,270        | \$53.96-   |          |  |
| NET AMOUNT ADJUSTED: |             |           |                        |          |               | \$285.97-  |          |  |

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|----------------|-----------|-----------------------|----------|---------------|------------|-------|--|
| 02461-001            | SWISS BLEND #1 |           | MCKS                  | LIQ      | 055 GL DRM EA |            |       |  |
| TYP                  | REF-#          | OPID      | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| SCR                  |                | CUI       | DISPOSED OF - SYSTECH | 188.75   | -1            | \$188.75-  | 59412 |  |
| NET AMOUNT ADJUSTED: |                |           |                       |          |               | \$188.75-  |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02721-001            | GLYCOL ETHER DPM |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P07972       | CUH       |        | 35.30    | -4,500        | \$1,588.50- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |               | \$1,588.50- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|-------------|----------|---------------|--------------|----------|--|
| 02755-013            | HYDROGEN PEROXIDE | 35% TECH  | MSS         | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08130        | CUI       | 157 X 500   | 22.00    | -81,094       | \$17,840.68- | 13116501 |  |
|                      | 544-P08173        | CUI       | 6 X 480 14% | 22.00    | -1,152        | \$253.44-    |          |  |
| NET AMOUNT ADJUSTED: |                   |           |             |          |               | \$18,094.12- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------------|-----------|--------------|----------|---------------|-------------|----------|--|
| 02755-017            | HYDROGEN PEROXIDE | 50% TECH  | MSS          | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#             | OPID      | REASON       | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08085        | CUH       | 50/500# DRS. | 31.94    | -23,650       | \$7,553.81- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |           |              |          |               | \$7,553.81- |          |  |

| PROD-CD              | PROD-NAME                 | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|---------------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02757-001            | MINERAL SPIRITS, ODORLESS |           | *      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                     | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08033                | CUI       |        | 26.64    | -18,860       | \$5,024.30- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                           |           |        |          |               | \$5,024.30- |          |  |

MCK0062044

PGM: CK02L21P VER 01.4

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 18

DATE: 09/28/84 TIME: 22:41:05 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
09/84

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME               | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------------------|-----------|--------------|----------|---------------|-------------|----------|--|
| 02760-001            | MINERAL SPIRITS,REGULAR | *         |              | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                   | OPID      | REASON       | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08275              | CUH       | 50/RECON DRS | 16.94    | -17,799       | \$3,015.15- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                         |           |              |          |               | \$3,015.15- |          |  |

MCK0062045

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G10

10/84

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM        |       |  |
|----------------------|------------------|-----------|--------------------|----------|---------------|-----------|-------|--|
| 01002-001            | PROPYLENE GLYCOL |           | *                  | LIQ      | 001 GL BLK LB |           |       |  |
| TYP                  | REF-#            | OPID      | REASON             | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHQ                  |                  | CUI       | 10 31 84 INVENTORY | 39.96    | -593          | \$236.96- | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |                    |          |               | \$236.96- |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------------|-----------|------------------|----------|---------------|--------------|----------|--|
| 01002-005            | PROPYLENE GLYCOL |           | USP              | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#            | OPID      | REASON           | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P08329       | C09       | 1/17E            | 38.32    | -160          | \$61.31-     | 13116501 |  |
|                      | 544-P08330       | C09       | 350/17E NEWLINED | 38.32    | -84,000       | \$32,188.80- |          |  |
|                      | 544-P08330       | C09       | 350/17E NEWLINED | 38.32    | -84,000       | \$32,188.80- |          |  |
|                      | 544-P08453       | CUI       | 2 DRS            | 38.32    | -960          | \$367.87-    |          |  |
| NET AMOUNT ADJUSTED: |                  |           |                  |          |               | \$64,806.78- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|------------------|-----------|--------------------|----------|---------------|------------|-------|--|
| 01002-007            | PROPYLENE GLYCOL | TECHNICAL | MCKS               | LIQ      | 055 GL DRN EA |            |       |  |
| TYP                  | REF-#            | OPID      | REASON             | AVG-COST | QTY-ADJST     | AMT-ADJST  | GL #  |  |
| OHQ                  |                  | CUI       | 10/31/83 INVENTORY | 214.40   | +12           | \$2,572.80 | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |                    |          |               | \$2,572.80 |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|------------------|-----------|-------------------|----------|---------------|-------------|-------|--|
| 01002-008            | PROPYLENE GLYCOL | MCKS      | USP               | LIQ      | 480 LB DRN EA |             |       |  |
| TYP                  | REF-#            | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #  |  |
| OHQ                  |                  | CUI       | 10 31 84 PHYS INV | 228.94   | -6            | \$1,373.64- | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |                   |          |               | \$1,373.64- |       |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|------------------------|-----------|--------------------|----------|---------------|-------------|-------|--|
| 01004-001            | HYDROXYACETIC ACID 70% |           | *                  | LIQ      | 001 GL BLK LB |             |       |  |
| TYP                  | REF-#                  | OPID      | REASON             | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #  |  |
| OHQ                  |                        | CUI       | 10/31/84 INVENTORY | 58.93    | -7,739        | \$4,560.59- | 59417 |  |
| NET AMOUNT ADJUSTED: |                        |           |                    |          |               | \$4,560.59- |       |  |

| TYP                  | REF-#      | OPID | REASON    | AVG-COST | QTY-ADJST | AMT-ADJST    | GL #     |
|----------------------|------------|------|-----------|----------|-----------|--------------|----------|
| RPK                  | 544-P08547 | C09  | 51/ACT II | 58.93    | -28,050   | \$16,529.87- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |           |          |           | \$16,529.87- |          |

MCK0062046

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME              | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |
|-----------|------------------------|-----------|-------------------|----------|------------|------------|-------|
| 01004-003 | HYDROXYACETIC ACID 70% |           | MCKS              | LIQ      | 055 GL RDM | EA         |       |
| TYP       | REF-#                  | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHD       |                        | CUI       | 10/31/84INVENTORY | 337.72   | -1         | \$337.72-  | 59417 |

NET AMOUNT ADJUSTED: \$337.72-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |
|-----------|-----------|-----------|-------------------|----------|------------|------------|-------|
| 01011-002 | CHLORINE  |           | *                 | GAS      | 001 LB BLK | LB         |       |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHD       |           | CUI       | 10 31 84 PHYS INV | 7.59     | -10,533    | \$784.27-  | 59417 |

NET AMOUNT ADJUSTED: \$784.27-

| TYP | REF-#      | OPID | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|------------------|----------|------------|-------------|----------|
| RPK | 544-P08347 | CUH  | 34/150 + 15/TONS | 7.59     | -35,100    | \$2,664.09- | 13116501 |
|     | 544-P08348 | CUH  | 13/150 + 33/TONS | 7.59     | -67,950    | \$5,157.41- |          |
|     | 544-P08376 | CUH  | 37/150 + 24/TONS | 7.59     | -53,550    | \$4,064.45- |          |
|     | 544-P08377 | CUH  | 30/TONS          | 7.59     | -60,000    | \$4,554.00- |          |
|     | 544-P08425 | CUI  | 74/150           | 7.59     | -11,100    | \$842.49-   |          |
|     | 544-P08426 | CUI  | 27/2000          | 7.59     | -54,000    | \$4,098.60- |          |
|     | 544-P08428 | CUI  | 59/15,35/2000    | 7.59     | -78,850    | \$5,984.72- |          |
|     | 544-P08429 | CUI  | 9/2000           | 7.59     | -18,000    | \$1,366.20- |          |
|     | 544-P08430 | CUI  | 13/2000          | 7.59     | -26,000    | \$1,973.40- |          |
|     | 544-P08449 | CUI  | 24T32GVT31MCK    | 7.59     | -57,450    | \$4,360.46- |          |
|     | 544-P08467 | CUI  | 14-TN            | 7.59     | -28,000    | \$2,125.20- |          |
|     | 544-P08481 | C09  | 26/T 11/150      | 7.59     | -53,650    | \$4,072.04- |          |
|     | 544-P08488 | C09  | BLEND W13829     | 7.59     | -2,083     | \$158.10-   |          |
|     | 544-P08500 | C09  | 28/TN 36/150 CYL | 7.59     | -61,400    | \$4,660.26- |          |
|     | 544-P08522 | C09  | 19120/TT         | 7.59     | -2,505     | \$190.13-   |          |
|     | 544-P08524 | C09  | 28/TN            | 7.59     | -56,000    | \$4,250.40- |          |
|     | 544-P08540 | C09  | 23/150,28/TN     | 7.59     | -59,450    | \$4,512.26- |          |
|     | 544-P08558 | C09  | 18/TN CYLS       | 7.59     | -36,000    | \$2,732.40- |          |
|     | 544-P08579 | C09  | 54/150;32/TN     | 7.59     | -72,100    | \$5,472.39- |          |
|     | 544-P08598 | C09  | 28/TN;19/150     | 7.59     | -44,050    | \$3,343.40- |          |
|     | 544-P08602 | C09  | BLEACH/AJAX      | 7.59     | -6,693     | \$508.00-   |          |
|     | 544-P08622 | C09  | 33/TN;88/150     | 7.59     | -79,200    | \$6,011.28- |          |
|     | 544-P08634 | C09  | 34/TN CYLS       | 7.59     | -68,000    | \$5,161.20- |          |
|     | 544-P08648 | C09  | 23/TN CYLS       | 7.59     | -46,000    | \$3,491.40- |          |
|     | 544-P08675 | C09  | BLEND            | 7.59     | -3,276     | \$248.65-   |          |
|     | 544-P08676 | C09  | 57/150;25/TN     | 7.59     | -58,550    | \$4,443.95- |          |
|     | 544-P08699 | C09  | 28/TN;91/150#    | 7.59     | -69,650    | \$5,286.44- |          |
|     | 544-P08716 | C09  | 44/150;19/TN     | 7.59     | -44,600    | \$3,385.14- |          |
|     | 544-P08725 | C09  | 57/150;21/TN     | 7.59     | -50,550    | \$3,836.75- |          |

NET AMOUNT ADJUSTED: \$98,955.21-

MCK0062047

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM | AMT-ADJUST  | GL #  |
|----------------------|-----------|-----------|--------------------|----------|------------|----|-------------|-------|
| 01011-003            | CHLORINE  |           | MCKS               | GAS      | 001 TN CYL | EA |             |       |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST |    |             |       |
| OHD                  |           | CUI       | 10/31/84 INVENTORY | 180.01   | -11        |    | \$1,980.11- | 59417 |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            |    | \$1,980.11- |       |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|----------------------|-----------|-----------|-------------------|----------|------------|----|------------|-------|
| 01011-004            | CHLORINE  |           | MCKS              | GAS      | 150 LB CYL | EA |            |       |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST |    |            |       |
| OHD                  |           | CUI       | 5/B SVT-P08481    | 24.76    | -11        |    | \$272.36-  | 59417 |
|                      |           | CUI       | C-P08428 RCD WRG  | 24.76    | -11        |    | \$272.36-  |       |
|                      |           | CUI       | 10 31 84 PHYS INV | 24.76    | -17        |    | \$420.92-  |       |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            |    | \$965.64-  |       |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|----------------------|-----------|-----------|-------------------|----------|------------|----|------------|-------|
| 01011-005            | CHLORINE  |           | MCKS              | GAS      | 100 LB CYL | EA |            |       |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST |    |            |       |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 16.57    | +5         |    | \$82.85    | 59417 |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            |    | \$82.85    |       |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|----------------------|-----------|-----------|--------------------|----------|------------|----|------------|-------|
| 01011-007            | CHLORINE  |           | CUST               | GAS      | 150 LB CYL | EA |            |       |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST |    |            |       |
| OHD                  |           | CUI       | RCD AS MCK 8481    | 24.75    | +11        |    | \$272.25   | 59417 |
|                      |           | CUI       | CRCT RCT OF P08428 | 24.75    | +11        |    | \$272.25   |       |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            |    | \$544.50   |       |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|----------------------|-------------|-----------|-------------------|----------|------------|----|------------|-------|
| 01013-001            | ACETIC ACID | GLACIAL   | *                 | LIQ      | 001 GL BLK | LB |            |       |
| TYP                  | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST |    |            |       |
| OHD                  |             | CUI       | 10 31 84 PHYS INV | 23.58    | -426       |    | \$100.45-  | 59417 |
| NET AMOUNT ADJUSTED: |             |           |                   |          |            |    | \$100.45-  |       |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|----------------|----------|------------|--------------|----------|
| RPK                  | 544-P08324 | CUI  | 8 DRS          | 23.58    | -19,136    | \$4,512.27-  | 13116501 |
|                      | 544-P08418 | CUI  | 10XVAR ON 8324 | 23.58    | -1         | \$0.24-      |          |
|                      | 544-P08439 | CUI  | 15 DRS         | 23.58    | -6,750     | \$1,591.65-  |          |
|                      | 544-P08447 | CUI  | 49 DRS         | 23.58    | -17,885    | \$4,217.28-  |          |
|                      | 544-P08689 | CO9  | 32/ACT II      | 23.58    | -14,400    | \$3,395.52-  |          |
|                      | 544-P08690 | CO9  | BLEND          | 23.58    | -11,520    | \$2,716.42-  |          |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$16,433.38- |          |

MCK0062048

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-------------|-----------|--------------------|----------|------------|------------|-------|--|
| 01013-005 | ACETIC ACID | GLACIAL   | MCKS               | LIQ      | 055 GL RDM | EA         |       |  |
| TYP       | REF-#       | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |             | CUI       | PHYSICAL INVENTORY | 118.92   | -6         | \$713.52-  | 59417 |  |

NET AMOUNT ADJUSTED: \$713.52-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01013-006 | ACETIC ACID | 80% TECH  | MCKS              | LIQ      | 055 GL RDM | EA         |       |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |             | CUI       | 10 31 84 PHYS INV | 102.24   | -3         | \$306.72-  | 59417 |  |

NET AMOUNT ADJUSTED: \$306.72-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |
|-----------|-----------|-----------|-------------------|----------|------------|-------------|-------|--|
| 01018-001 | ACETONE   |           | *                 | LIQ      | 001 GL BLK | LB          |       |  |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD       |           | CUI       | 10 31 84 PHYS INV | 22.28    | -6,287     | \$1,400.74- | 59417 |  |

NET AMOUNT ADJUSTED: \$1,400.74-

| TYP | REF-#      | OPID | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|-----|------------|------|--------------------|----------|------------|--------------|----------|
| RPK | 544-P08407 | CUI  | 100 DRS            | 22.28    | -36,414    | \$8,113.04-  | 13116501 |
|     | 544-P08421 | CUI  | 75 X 357           | 22.28    | -27,311    | \$6,084.89-  |          |
|     | 544-P08443 | CO9  | 20 DRS             | 22.28    | -7,140     | \$1,590.79-  |          |
|     | 544-P08555 | CUI  | 150 X 357          | 22.28    | -54,621    | \$12,169.56- |          |
|     | 544-P08569 | CUI  | 40 X 350-POLYESTER | 22.28    | -14,280    | \$3,181.58-  |          |

NET AMOUNT ADJUSTED: \$31,139.86-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD                 | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-----------|-----------|----------------------|----------|------------|------------|-------|--|
| 01018-007 | ACETONE   |           | MCKS                 | LIQ      | 054 GL DRM | EA         |       |  |
| TYP       | REF-#     | OPID      | REASON               | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |           | CUI       | CRCT P.C. FOR P08407 | 93.90    | +100       | \$9,390.00 | 59417 |  |
|           |           | CUI       | PHYSICAL INVENTORY   | 93.90    | -8         | \$751.20-  |       |  |

NET AMOUNT ADJUSTED: \$8,638.80

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-----------|-----------|--------------------|----------|------------|------------|-------|--|
| 01018-008 | ACETONE   |           | MCKS               | LIQ      | 005 GL PL  | EA         |       |  |
| TYP       | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |           | CUI       | 10/31/84 INVENTORY | 11.24    | -10        | \$112.40-  | 59417 |  |

NET AMOUNT ADJUSTED: \$112.40-

MCK0062049

PGM: CK02L21P VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 56  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM           |       |  |  |
|----------------------|-----------|-----------|-----------------------|----------|------------|--------------|-------|--|--|
| 01018-010            | ACETONE   |           | MCKS                  | LIQ      | 055 GL RDM | EA           |       |  |  |
| TYP                  | REF-#     | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |  |
| OH0                  |           | CUI       | IPO 8407 WRN PRD.CODE | 100.81   | -100       | \$10,081.00- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                       |          |            | \$10,081.00- |       |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|--------------|-----------|--------|----------|------------|------------|-------|--|--|
| 01044-004            | AQUA AMMONIA | 26 BE     | *      | LIQ      | 055 GL RDM | EA         |       |  |  |
| TYP                  | REF-#        | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| INT                  |              | C09       | PIKE   | 28.05    | -4         | \$112.20-  | 73550 |  |  |
| NET AMOUNT ADJUSTED: |              |           |        |          |            | \$112.20-  |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |          |  |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|----------|--|--|
| 01053-004            | N-BUTYL ACETATE | 99%       | MCKS              | LIQ      | 055 GL DRM | EA         |          |  |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| OH0                  |                 | CUI       | 10 31 84 PHYS INV | 221.09   | -1         | \$221.09-  | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$221.09-  |          |  |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P08557      | C09       | BLEND             | 221.09   | -4         | \$884.36-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$884.36-  |          |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01054-025            | BORIC ACID |           | *                 | GRAN     | 001 LB BLK | LB         |       |  |  |
| TYP                  | REF-#      | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |            | CUI       | 10 31 84 PHYS INV | 27.30    | -2,220     | \$606.06-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |            |           |                   |          |            | \$606.06-  |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01054-026            | BORIC ACID |           | MCKS              | GRAN     | 100 LB BAG | EA         |       |  |  |
| TYP                  | REF-#      | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |            | CUI       | 10 31 84 PHYS INV | 29.24    | -12        | \$350.88-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |            |           |                   |          |            | \$350.88-  |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01058-005            | GLYCOL ETHER EM |           | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                 | CUI       | 10/31/84 PHYS INV | 169.15   | -1         | \$169.15-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$169.15-  |       |  |  |

MCK0062050

PGM: CK02L21P VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 57  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|------------|-------|--|
| 01059-004            | GLYCOL ETHER EE |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 224.68   | -2         | \$449.36-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$449.36-  |       |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|----------------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01062-004            | AMMONIUM THIOSULFATE |           | MCKS              | LIQ      | 055 GL     | REM EA     |       |  |
| TYP                  | REF-#                | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                      | CUI       | 10 31 84 PHYS INV | 85.36    | +2         | \$170.72   | 59417 |  |
| NET AMOUNT ADJUSTED: |                      |           |                   |          |            | \$170.72   |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|--------------|-----------|------------------|----------|------------|------------|----------|--|
| 01066-002            | DEQUEST 2000 |           | MSS              | SOLN     | 600 LB     | DRM EA     |          |  |
| TYP                  | REF-#        | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P08334   | CUH       | 40000 CHELACLEAN | 433.72   | -1         | \$433.72-  | 13116501 |  |
|                      | 544-P08646   | CO9       | CHELACLEAN 103   | 433.72   | -1         | \$433.72-  |          |  |
| NET AMOUNT ADJUSTED: |              |           |                  |          |            | \$867.44-  |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01080-004            | GLYCOL ETHER PM |           | MCKS              | LIQ      | 055 GL     | DRM EA     |       |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | 10 31 84 PHYS INV | 176.14   | +2         | \$352.28   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$352.28   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01081-001            | GLYCOL ETHER EB |           | MSS               | LIQ      | 001 GL     | BLK LB     |       |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | 10 31 84 PHYS INV | 36.92    | +53681     | \$2,097.43 | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$2,097.43 |       |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
|----------------------|------------|------|--------|----------|------------|------------|----------|--|
| RPK                  | 544-P08473 | CO9  | 6 DRS  | 36.92    | -2,540     | \$937.77-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$937.77-  |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|-------------|-------|--|
| 01082-005            | GLYCOL ETHER EB |           | MCKS               | LIQ      | 055 GL     | DRM EA      |       |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 167.66   | -18        | \$3,017.88- | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$3,017.88- |       |  |

MCK0062051

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                 | FORM     | -PACKAGE-- | UM |            |       |  |
|----------------------|-----------------|-----------|----------------------|----------|------------|----|------------|-------|--|
| 01082-019            | GLYCOL ETHER EB |           | CUST                 | LIQ      | 055 GL DRM | EA |            |       |  |
| TYP                  | REF-#           | OPID      | REASON               | AVG-COST | QTY-ADJUST |    | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | ACT.FILLED ON P08298 | 163.61   | +1         |    | \$163.61   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                      |          |            |    | \$163.61   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM |            |       |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|----|------------|-------|--|
| 01083-003            | GLYCOL ETHER DM |           | MCKS               | LIQ      | 055 GL DRM | EA |            |       |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST |    | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 218.20   | +1         |    | \$218.20   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            |    | \$218.20   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |             |          |  |
|----------------------|-----------------|-----------|--------|----------|------------|----|-------------|----------|--|
| 01084-001            | GLYCOL ETHER DM |           | MSS    | LIQ      | 001 LB BLK | LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08411      | CUI       | 19 DRS | 43.47    | -8,680     |    | \$3,773.20- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            |    | \$3,773.20- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM |            |       |  |
|----------------------|-------------------|-----------|--------------------|----------|------------|----|------------|-------|--|
| 01087-005            | GLYCOL ETHER DESG |           | MCKS               | LIQ      | 055 GL DRM | EA |            |       |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST |    | AMT-ADJUST | GL #  |  |
| OHD                  |                   | CUI       | 10/31/84 INVENTORY | 235.59   | +1         |    | \$235.59   | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |            |    | \$235.59   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM |              |          |  |
|----------------------|-----------------|-----------|-----------|----------|------------|----|--------------|----------|--|
| 01088-001            | GLYCOL ETHER DB |           | MSS       | LIQ      | 001 LB BLK | LB |              |          |  |
| TYP                  | REF-#           | OPID      | REASON    | AVG-COST | QTY-ADJUST |    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08320      | CUH       | 14/RECON  | 49.98    | -6,235     |    | \$3,116.25-  | 13116501 |  |
|                      | 544-P08322      | CUH       | 108/RECON | 49.98    | -47,595    |    | \$23,767.98- |          |  |
|                      | 544-P08339      | CUH       | 55 DRS    | 49.98    | -23,780    |    | \$11,685.24- |          |  |
| NET AMOUNT ADJUSTED: |                 |           |           |          |            |    | \$38,769.47- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM |            |       |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|----|------------|-------|--|
| 01088-007            | GLYCOL ETHER DB |           | MCKS              | LIQ      | 055 GL DRM | EA |            |       |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST |    | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | 10 31 84 PHYS INV | 238.76   | +1         |    | \$238.76   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            |    | \$238.76   |       |  |

MCK0062052

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|--------------|----------|------------|------------|-------|--|--|
| 01104-005            | GLYCERINE | 96%       | MCKS         | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | SHPD TO BRCH | 466.31   | +1         | \$466.31   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |              |          |            | \$466.31   |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|-------------|-------|--|--|
| 01104-006            | GLYCERINE | 96% USP   | MCKS              | LIQ      | 055 GL DRM | EA          |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 462.65   | -5         | \$2,313.25- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$2,313.25- |       |  |  |

| TYP                  | REF-#      | OPID | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
|----------------------|------------|------|----------|----------|------------|------------|----------|
| RPK                  | 544-P08714 | C09  | 17ERECON | 462.65   | -2         | \$925.30-  | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |          |          |            | \$925.30-  |          |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01104-007            | GLYCERINE | 99.5% USP | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 475.21   | -2         | \$950.42-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$950.42-  |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|------------|-----------|--------|----------|------------|--------------|----------|--|--|
| 01104-008            | GLYCERINE  | 96%       | USP    | LIQ      | 001 GL BLK | LB           |          |  |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08359 | CUI       | 1 DR   | 77.21    | -950       | \$733.50-    | 13116501 |  |  |
|                      | 544-P08360 | CUI       | 77 DRS | 77.21    | -43,890    | \$33,887.47- |          |  |  |
|                      | 544-P08642 | C09       | 34/17E | 77.21    | -19,380    | \$14,963.30- |          |  |  |
|                      | 544-P08643 | C09       | 1/17E  | 77.21    | -960       | \$741.22-    |          |  |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |            | \$50,325.49- |          |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------|-----------|---------------------|----------|------------|-------------|-------|--|--|
| 01104-011            | GLYCERINE | 99.5%     | USP                 | LIQ      | 001 GL BLK | LB          |       |  |  |
| TYP                  | REF-#     | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD                  |           | CUI       | C-EXPLANATION SHEET | 78.63    | -1,837     | \$1,444.43- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                     |          |            | \$1,444.43- |       |  |  |

| TYP | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|-----------------|----------|------------|-------------|----------|
| RPK | 544-P08441 | C09  | 1/17E           | 78.63    | -1,690     | \$1,328.85- | 13116501 |
|     | 544-P08445 | C09  | 17/NEW WH LINED | 78.63    | -9,690     | \$7,619.25- |          |
|     | 544-P08455 | C09  | 1 DR            | 78.63    | -570       | \$448.19-   |          |

MCK0062053

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G10

10/84

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$9,396.29-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #     |
|-----------|------------|-----------|--------|----------|---------------|----|--------------|----------|
| 01106-003 | POLYGLYCOL | 15-200    | MSS    | LIQ      | 001 GL BLK LB |    |              |          |
| TYP       | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    |    |              |          |
| RPK       | 544-P08592 | C09       | 61/17E | 70.65    | -26,660       |    | \$18,635.29- | 13116501 |

NET AMOUNT ADJUSTED: \$18,635.29-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM | AMT-ADJUST | GL #  |
|-----------|-----------|-----------|-------------------|----------|---------------|----|------------|-------|
| 01108-008 | FREON     | TE        | MCKS              | LIQ      | 055 GL DRM EA |    |            |       |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST    |    |            |       |
| OHQ       |           | CUI       | 10 31 84 PHYS INV | 645.68   | +2            |    | \$1,291.36 | 59417 |

NET AMOUNT ADJUSTED: \$1,291.36

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM | AMT-ADJUST  | GL #  |
|-----------|-----------|-----------|---------------------|----------|---------------|----|-------------|-------|
| 01110-001 | FREON     | TF        | MSS                 | LIQ      | 001 GL BLK LB |    |             |       |
| TYP       | REF-#     | OPID      | REASON              | AVG-COST | QTY-ADJUST    |    |             |       |
| OHQ       |           | CUI       | 10/31/84 INVENTORY  | 80.05    | -10,379       |    | \$8,308.39- | 59417 |
|           |           | CUI       | 10/31/84 INVENTORY  | 80.05    | +10,379       |    | \$8,308.39  |       |
|           |           | CUI       | REVSE 10/31/84 PSTG | 80.05    | +10,379       |    | \$8,308.39  |       |

NET AMOUNT ADJUSTED: \$8,308.39

| TYP | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|-----|------------|------|--------|----------|------------|--------------|----------|
| RPK | 544-P08568 | C09  | 50 DRS | 80.05    | -34,500    | \$27,617.25- | 13116501 |

NET AMOUNT ADJUSTED: \$27,617.25-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #  |
|-----------|-----------|-----------|-------------------|----------|---------------|----|--------------|-------|
| 01110-013 | FREON     | TF        | MCKS              | LIQ      | 055 GL DRM EA |    |              |       |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST    |    |              |       |
| OHQ       |           | CUI       | 10 31 84 PHYS INV | 543.15   | -28           |    | \$15,208.20- | 59417 |

NET AMOUNT ADJUSTED: \$15,208.20-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE--   | UM | AMT-ADJUST | GL #  |
|-----------|-----------|-----------|-------------------|----------|--------------|----|------------|-------|
| 01110-014 | FREON     | TF        | MCKS              | LIQ      | 005 GL PL EA |    |            |       |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST   |    |            |       |
| OHQ       |           | CUI       | 10 31 84 PHYS INV | 55.25    | +2           |    | \$110.50   | 59417 |

NET AMOUNT ADJUSTED: \$110.50

MCK0062054

DATE: 11/01/84 TIME: 02:04:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|--------------------|-----------|--------------|----------|------------|--------------|----------|--|--|
| 01113-007            | BORAX PENTAHYDRATE | 5 MOL     | *            | GRAN     | 001 LB BLK | LB           |          |  |  |
| TYP                  | REF-#              | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08697         | C09       | 1169/100#BGS | 9.55     | -58,450    | \$5,581.98-  | 13116501 |  |  |
|                      | 544-P08697         | C09       | 1169/100#BGS | 9.55     | -58,450    | \$5,581.98-  |          |  |  |
| NET AMOUNT ADJUSTED: |                    |           |              |          |            | \$11,163.96- |          |  |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|--------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01113-008            | BORAX PENTAHYDRATE | 5 MOL     | MCKS              | GRAN     | 100 LB BAG | EA         |       |  |  |
| TYP                  | REF-#              | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                    | CUI       | 10 31 84 PHYS INV | 12.38    | +3         | \$37.14    | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                    |           |                   |          |            | \$37.14    |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01115-004            | FREON     | TMC       | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 422.87   | +4         | \$1,691.48 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$1,691.48 |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01118-004            | FREON     | TMS       | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 587.97   | -1         | \$587.97-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$587.97-  |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM           |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|--------------|-------|--|--|
| 01120-012            | SODA ASH  | DENSE     | *                 | GRAN     | 001 LB BLK | LB           |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 5.57     | -99,800    | \$5,558.86-  | 59417 |  |  |
|                      |           | CUI       | 10 31 84 PHYS INV | 5.57     | -50,000    | \$2,785.00-  |       |  |  |
|                      |           | CUI       | 10 31 84 PHYS INV | 5.57     | -50,000    | \$2,785.00-  |       |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$11,128.86- |       |  |  |

| TYP | REF-#      | OPID | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|-----------|----------|------------|-------------|----------|
| RPK | 544-P07644 | C09  | 1953 BGS  | 5.57     | -50,062    | \$2,788.45- | 13116501 |
|     | 544-P07644 | C09  | 1953 BGS  | 5.57     | -50,063    | \$2,788.51- |          |
|     | 544-P07645 | CUI  | 958 BGS   | 5.57     | -98,275    | \$5,473.92- |          |
|     | 544-P08028 | C09  | 990 BAGS  | 5.57     | -99,425    | \$5,537.97- |          |
|     | 544-P08029 | C09  | 1999/BAGS | 5.57     | -50,187    | \$2,795.42- |          |
|     | 544-P08029 | C09  | 1999/BGS  | 5.57     | -50,188    | \$2,795.47- |          |
|     | 544-P08133 | C09  | 3793 BAGS | 5.57     | -94,825    | \$5,281.75- |          |
|     | 544-P08133 | C09  | 3793 BAGS | 5.57     | -7,150     | \$398.26-   |          |
|     | 544-P08133 | C09  | 3793 BAGS | 5.57     | -94,825    | \$5,281.75- |          |

MCK0062055

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |               |      |         |             |
|------------|-----|---------------|------|---------|-------------|
| 544-P08344 | CUH | 3969/50# BAGS | 5.57 | -99,900 | \$5,564.43- |
| 544-P08344 | CUH | 3969/50# BAGS | 5.57 | -99,900 | \$5,564.43- |
| 544-P08530 | CO9 | 2010 BAGS     | 5.57 | -99,999 | \$5,569.94- |
| 544-P08530 | CO9 | 2020 BAGS     | 5.57 | -98,700 | \$5,497.59- |

NET AMOUNT ADJUSTED: \$55,337.89-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |       |  |
|-----------|-----------|-----------|---------------------|----------|------------|-------------|-------|--|
| 01120-015 | SODA ASH  | DENSE     | MCKS                | GRAN     | 100 LB BAG | EA          |       |  |
| TYP       | REF-#     | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD       |           | CUI       | CRCT RCS ON SDM3057 | 7.07     | +30        | \$212.10    | 59417 |  |
|           |           | CUI       | 10 31 84 PHYS INV   | 7.07     | +1,505     | \$10,640.35 |       |  |

NET AMOUNT ADJUSTED: \$10,852.45

|     |            |      |                         |          |            |             |       |
|-----|------------|------|-------------------------|----------|------------|-------------|-------|
| TYP | REF-#      | OPID | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |
| RCS | 544-P08074 | CUH  | WARN. LAMB. SDM/BP 3059 | 7.07     | -240       | \$1,696.80- | 12492 |
|     | 544-P08074 | CUH  | FRUIT GRO SDM/BP 3062   | 7.07     | -480       | \$3,393.60- |       |

NET AMOUNT ADJUSTED: \$5,090.40-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-----------|-----------|-------------------|----------|------------|------------|-------|--|
| 01120-016 | SODA ASH  | DENSE     | MCKS              | GRAN     | 050 LB BAG | EA         |       |  |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |           | CUI       | 10 31 84 PHYS INV | 3.59     | +401       | \$1,439.59 | 59417 |  |

NET AMOUNT ADJUSTED: \$1,439.59

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-------------------|-----------|---------------------|----------|------------|------------|-------|--|
| 01124-070 | HYDROGEN PEROXIDE | 70% TECH  | MSS                 | LIQ      | 001 LB BLK | LB         |       |  |
| TYP       | REF-#             | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |                   | CUI       | DRW DWN INCRCT-8537 | 44.10    | +4,000     | \$1,764.00 | 59417 |  |

NET AMOUNT ADJUSTED: \$1,764.00

|     |            |      |               |          |            |              |          |
|-----|------------|------|---------------|----------|------------|--------------|----------|
| TYP | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
| RPK | 544-P08379 | CUI  | T/L           | 44.10    | -35,000    | \$15,435.00- | 13116501 |
|     | 544-P08517 | CO9  | BLEN0         | 44.10    | -11,210    | \$4,943.61-  |          |
|     | 544-P08537 | CO9  | 7200 GL       | 44.10    | -56,626    | \$24,972.07- |          |
|     | 544-P08546 | CUI  | BAL OF P08537 | 44.10    | -1         | \$0.44-      |          |

NET AMOUNT ADJUSTED: \$45,351.12-

MCK0062056

PGM: CK02L21P VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 63  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM           |       |  |
|----------------------|-------------------|-----------|---------------------|----------|------------|--------------|-------|--|
| 01124-076            | HYDROGEN PEROXIDE | 50%       | MCKS                | LIQ      | 055 GL RDM | EA           |       |  |
| TYP                  | REF-#             | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |
| OHD                  |                   | CUI       | REVERSE OF 9/84 OHD | 174.53   | -63        | \$10,995.39- | 59417 |  |
|                      |                   | CUI       | 10/31/84 INVENTORY  | 174.53   | -6         | \$1,047.18-  |       |  |
| NET AMOUNT ADJUSTED: |                   |           |                     |          |            | \$12,042.57- |       |  |

| PROD-CD              | PROD-NAME         | QUALIFIER  | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-------------------|------------|--------------------|----------|------------|-------------|-------|--|
| 01124-080            | HYDROGEN PEROXIDE | 35%SUPER D | MCKS               | LIQ      | 055 GL RDM | EA          |       |  |
| TYP                  | REF-#             | OPID       | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                   | CUI        | 10/31/84 INVENTORY | 161.26   | -21        | \$3,386.46- | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |            |                    |          |            | \$3,386.46- |       |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-------------------|-----------|--------------------|----------|------------|-------------|-------|--|
| 01124-086            | HYDROGEN PEROXIDE | 50%       | CUST               | LIQ      | 055 GL DRM | EA          |       |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                   | CUI       | 10/31/84 INVENTORY | 172.98   | -15        | \$2,594.70- | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |            | \$2,594.70- |       |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-------------------|-----------|-------------------|----------|------------|-------------|-------|--|
| 01125-001            | HYDROCHLORIC ACID | 20 BE     | *                 | LIQ      | 001 LB BLK | LB          |       |  |
| TYP                  | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                   | CUI       | 10 31 84 PHYS INV | 3.40     | -34,313    | \$1,166.64- | 59417 |  |
|                      |                   | CUI       | 10 31 84 PHYS INV | 3.40     | -50,000    | \$1,700.00- |       |  |
|                      |                   | CUI       | 10 31 84 PHYS INV | 3.40     | -50,000    | \$1,700.00- |       |  |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |            | \$4,566.64- |       |  |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
|----------------------|------------|------|----------------|----------|------------|-------------|----------|--|
| RPK                  | 544-P08410 | C09  | 171 DRS        | 3.40     | -23,940    | \$813.96-   | 13116501 |  |
|                      | 544-P08596 | C09  | 135/ACT II     | 3.40     | -67,500    | \$2,295.00- |          |  |
|                      | 544-P08609 | C09  | 112/POLY DRS   | 3.40     | -15,680    | \$533.12-   |          |  |
|                      | 544-P08627 | C09  | 108/CUST DRS   | 3.40     | -4,657     | \$158.34-   |          |  |
|                      | 544-P08628 | C09  | 12 CUST DRMS   | 3.40     | -5,962     | \$202.71-   |          |  |
|                      | 544-P08635 | C09  | 8/CUST DRS     | 3.40     | -3,975     | \$135.15-   |          |  |
|                      | 544-P08658 | C09  | CORR ON P08628 | 3.40     | -1         | \$0.03-     |          |  |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$4,138.31- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-------------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01125-006            | HYDROCHLORIC ACID | 22 BE     | *                 | LIQ      | 001 LB BLK | LB         |       |  |
| TYP                  | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                   | CUI       | 10 31 84 PHYS INV | 3.63     | +3,751     | \$136.16   | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |            | \$136.16   |       |  |

MCK0062057

DATE: 11/01/84 TIME: 02:04:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| TYP | REF-#      | OPID | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|--------------------|----------|------------|-------------|----------|
| RPK | 544-P08340 | CUH  | 11300 GL HCL 20    | 3.63     | -98,300    | \$3,568.29- | 13116501 |
|     | 544-P08470 | CO9  | 20,000 GLS         | 3.63     | -88,355    | \$3,207.29- |          |
|     | 544-P08470 | CO9  | 20,000 GLS         | 3.63     | -88,355    | \$3,207.29- |          |
|     | 544-P08491 | CUI  | CRCT RCT OF P08470 | 3.63     | -1         | \$0.04-     |          |
|     | 544-P08559 | CO9  | 13000G DILUTION    | 3.63     | -98,300    | \$3,568.29- |          |
|     | 544-P08571 | CO9  | BLEND              | 3.63     | -95,000    | \$3,448.50- |          |
|     | 544-P08571 | CO9  | BLEND              | 3.63     | -95,000    | \$3,448.50- |          |
|     | 544-P08571 | CO9  | BLEND              | 3.63     | -10,000    | \$363.00-   |          |
|     | 544-P08578 | CO9  | CORR ON P08559     | 3.63     | -1         | \$0.04-     |          |
|     | 544-P08691 | CUI  | DILUTION           | 3.63     | -98,300    | \$3,568.29- |          |

NET AMOUNT ADJUSTED: \$24,379.53-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|-----------|-------------------|-----------|--------------------|----------|------------|----|------------|-------|
| 01125-011 | HYDROCHLORIC ACID | 20 BE     | MCKS               | LIQ      | 055 GL RDM | EA |            |       |
| TYP       | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST |    |            |       |
| OHQ       |                   | CUI       | 10/31/84 INVENTORY | 30.30    | -5         |    | \$151.50-  | 59417 |

NET AMOUNT ADJUSTED: \$151.50-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|-----------|-------------------|-----------|-----------------|----------|------------|----|------------|-------|
| 01125-012 | HYDROCHLORIC ACID | 20 BE     | MCKS            | LIQ      | 015 GL CBY | EA |            |       |
| TYP       | REF-#             | OPID      | REASON          | AVG-COST | QTY-ADJUST |    |            |       |
| OHQ       |                   | CUI       | SHIPPED TO BRCH | 8.80     | +4         |    | \$35.20    | 59417 |

NET AMOUNT ADJUSTED: \$35.20

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM | AMT-ADJUST | GL #  |
|-----------|-----------|-----------|-------------------|----------|------------|----|------------|-------|
| 01132-001 | METHANOL  |           | *                 | LIQ      | 001 GL BLK | LB |            |       |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST |    |            |       |
| OHQ       |           | CUI       | 10 31 84 PHYS INV | 8.66     | +12,476    |    | \$1,080.42 | 59417 |

NET AMOUNT ADJUSTED: \$1,080.42

| TYP | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|----------------|----------|------------|-------------|----------|
| RPK | 544-P08353 | CUH  | 200 DRS        | 8.66     | -73,032    | \$6,324.57- | 13116501 |
|     | 544-P08371 | CUH  | 500G XYZ BLEND | 8.66     | -255       | \$22.08-    |          |
|     | 544-P08462 | CO9  | 100 DRS        | 8.66     | -36,516    | \$3,162.29- |          |
|     | 544-P08629 | CO9  | 100/17E        | 8.66     | -36,516    | \$3,162.29- |          |

NET AMOUNT ADJUSTED: \$12,671.23-

MCK0062058

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01132-002            | METHANOL  |           | MCKS               | LIQ      | 054 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10/31/84 INVENTORY | 47.67    | -9         | \$429.03-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$429.03-  |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01132-004            | METHANOL  |           | MCKS              | LIQ      | 005 GL     | PL EA      |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 7.37     | -2         | \$14.74-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$14.74-   |       |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01143-002            | SODIUM GLUCONATE |           | *                 | FINE     | 050 LB     | BAG EA     |       |  |  |
| TYP                  | REF-#            | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                  | CUI       | 10 31 84 PHYS INV | 28.50    | +9         | \$256.50   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |                   |          |            | \$256.50   |       |  |  |

| TYP                  | REF-#      | OPID | REASON               | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|----------------------|----------|------------|-------------|----------|
| RPK                  | 544-P08334 | CUH  | 40000 CHELACLEAN     | 28.50    | -7         | \$199.50-   | 13116501 |
|                      | 544-P08395 | CUH  | CHELACLEAN 103 BLEND | 28.50    | -7         | \$199.50-   |          |
|                      | 544-P08413 | CUI  | 4000 GL              | 28.50    | -16        | \$456.00-   |          |
|                      | 544-P08646 | CO9  | CHELACLEAN 103       | 28.50    | -7         | \$199.50-   |          |
| NET AMOUNT ADJUSTED: |            |      |                      |          |            | \$1,054.50- |          |

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|---------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01147-022            | SODIUM HYPOCHLORITE | 12.5%     | MCKS              | LIQ      | 001 GL     | BLK LB     |       |  |  |
| TYP                  | REF-#               | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                     | CUI       | 10 31 84 PHYS INV | 3.13     | +32,450    | \$1,015.69 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                     |           |                   |          |            | \$1,015.69 |       |  |  |

| TYP                  | REF-#      | OPID | REASON      | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |
|----------------------|------------|------|-------------|----------|------------|-------------|-------|
| RCS                  | 544-P08602 | CO9  | BLEACH/AJAX | 3.13     | -51,090    | \$1,599.12- | 12492 |
| NET AMOUNT ADJUSTED: |            |      |             |          |            | \$1,599.12- |       |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|--------------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01154-007            | SODIUM SULFATE ANHYDROUS |           | MCKS              | GRAN     | 100 LB     | BAG EA     |       |  |  |
| TYP                  | REF-#                    | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                          | CUI       | 10 31 84 PHYS INV | 7.70     | +116       | \$893.20   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                          |           |                   |          |            | \$893.20   |       |  |  |

MCK0062059

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|--------------------------|-----------|--------------|----------|---------------|--------------|----------|--|
| 01154-010            | SODIUM SULFATE ANHYDROUS | ANHYD     | *            | GRAN     | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#                    | OPID      | REASON       | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08134               | C09       | 1939 BAGS    | 6.01     | -97,080       | \$5,834.51-  | 13116501 |  |
|                      | 544-P08134               | C09       | 1939 BGS     | 6.01     | -97,080       | \$5,834.51-  |          |  |
|                      | 544-P08528               | C09       | 797 BGS      | 6.01     | -38,485       | \$2,312.95-  |          |  |
|                      | 544-P08529               | C09       | 1590/100#BGS | 6.01     | -78,818       | \$4,736.96-  |          |  |
|                      | 544-P08529               | C09       | 1590/100#BGS | 6.01     | -78,817       | \$4,736.90-  |          |  |
| NET AMOUNT ADJUSTED: |                          |           |              |          |               | \$23,455.83- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|--------------------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01154-011            | SODIUM SULFATE ANHYDROUS |           | MCKS              | GRAN     | 050 LB BAG EA |            |       |  |
| TYP                  | REF-#                    | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD                  |                          | CUI       | 10 31 84 PHYS INV | 3.79     | +46           | \$174.34   | 59417 |  |
| NET AMOUNT ADJUSTED: |                          |           |                   |          |               | \$174.34   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|-----------------|-----------|--------------------|----------|---------------|------------|-------|--|
| 01158-044            | SODIUM SILICATE | N         | MCKS               | LIQ      | 055 GL DRM EA |            |       |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 60.21    | -5            | \$301.05-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |               | \$301.05-  |       |  |

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|---------------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01162-001            | METHYL ETHYL KETONE |           | *                 | LIQ      | 001 GL BLK LB |            |       |  |
| TYP                  | REF-#               | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD                  |                     | CUI       | 10 31 84 PHYS INV | 32.07    | +2,734        | \$876.79   | 59417 |  |
| NET AMOUNT ADJUSTED: |                     |           |                   |          |               | \$876.79   |       |  |

| TYP                  | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
|----------------------|------------|------|---------------|----------|------------|--------------|----------|--|
| RPK                  | 544-P08335 | CUH  | SANBAR 10 DRS | 32.07    | -202       | \$64.78-     | 13116501 |  |
|                      | 544-P08497 | C09  | 75/17E        | 32.07    | -27,999    | \$8,979.28-  |          |  |
|                      | 544-P08670 | C09  | 108/56L CAN   | 32.07    | -3,564     | \$1,142.97-  |          |  |
| NET AMOUNT ADJUSTED: |            |      |               |          |            | \$10,167.03- |          |  |

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|---------------------|-----------|--------------------|----------|---------------|------------|-------|--|
| 01162-003            | METHYL ETHYL KETONE |           | MCKS               | LIQ      | 055 GL DRM EA |            |       |  |
| TYP                  | REF-#               | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD                  |                     | CUI       | 10/31/84 INVENTORY | 133.83   | -7            | \$936.81-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                     |           |                    |          |               | \$936.81-  |       |  |

MCK0062060

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME   | QUALIFIER  | GRAD     | FORM     | -PACKAGE-- | UM  | LIQ | 055 GL | DRM | EA | AMT-ADJUST | GL #  |
|----------------------|-------------|------------|----------|----------|------------|-----|-----|--------|-----|----|------------|-------|
| 01166-042            | MINERAL OIL | SONTEX 85T | MCKS     | LIQ      | 055 GL     | DRM | EA  |        |     |    |            |       |
| TYP                  | REF-#       | OPID       | REASON   | AVG-COST | QTY-ADJUST |     |     |        |     |    |            |       |
| OH0                  |             | CUI        | 10 31 84 | 178.00   | +2         |     |     |        |     |    | \$356.00   | 59417 |
| NET AMOUNT ADJUSTED: |             |            |          |          |            |     |     |        |     |    | \$356.00   |       |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD   | FORM     | -PACKAGE-- | UM  | LIQ | 001 LB | BLK | LB | AMT-ADJUST  | GL #     |
|----------------------|------------------|------------|--------|----------|------------|-----|-----|--------|-----|----|-------------|----------|
| 01170-003            | MONOETHANOLAMINE | LOW FREEZE | *      | LIQ      | 001 LB     | BLK | LB  |        |     |    |             |          |
| TYP                  | REF-#            | OPID       | REASON | AVG-COST | QTY-ADJUST |     |     |        |     |    |             |          |
| RPK                  | 544-P08409       | CUI        | 36 DRS | 32.90    | -16,560    |     |     |        |     |    | \$5,448.24- | 13116501 |
| NET AMOUNT ADJUSTED: |                  |            |        |          |            |     |     |        |     |    | \$5,448.24- |          |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD        | FORM     | -PACKAGE-- | UM  | LIQ | 001 LB | BLK | LB | AMT-ADJUST  | GL #     |
|----------------------|------------------|-----------|-------------|----------|------------|-----|-----|--------|-----|----|-------------|----------|
| 01170-006            | MONOETHANOLAMINE |           | *           | LIQ      | 001 LB     | BLK | LB  |        |     |    |             |          |
| TYP                  | REF-#            | OPID      | REASON      | AVG-COST | QTY-ADJUST |     |     |        |     |    |             |          |
| RPK                  | 544-P08328       | CUH       | 45/POLY DRS | 38.53    | -20,710    |     |     |        |     |    | \$7,979.56- | 13116501 |
| NET AMOUNT ADJUSTED: |                  |           |             |          |            |     |     |        |     |    | \$7,979.56- |          |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM  | LIQ | 055 GL | DRM | EA | AMT-ADJUST | GL #  |
|----------------------|------------------|-----------|----------|----------|------------|-----|-----|--------|-----|----|------------|-------|
| 01170-011            | MONOETHANOLAMINE | 85%       | MCKS     | LIQ      | 055 GL     | DRM | EA  |        |     |    |            |       |
| TYP                  | REF-#            | OPID      | REASON   | AVG-COST | QTY-ADJUST |     |     |        |     |    |            |       |
| OH0                  |                  | CUI       | 10/31/84 | 150.46   | +1         |     |     |        |     |    | \$150.46   | 59417 |
| NET AMOUNT ADJUSTED: |                  |           |          |          |            |     |     |        |     |    | \$150.46   |       |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM  | LIQ | 001 GL | BLK | LB | AMT-ADJUST  | GL #  |
|----------------------|-----------------|-----------|----------|----------|------------|-----|-----|--------|-----|----|-------------|-------|
| 01172-001            | PHOSPHORIC ACID | 75%       | *        | LIQ      | 001 GL     | BLK | LB  |        |     |    |             |       |
| TYP                  | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST |     |     |        |     |    |             |       |
| OH0                  |                 | CUI       | 10 31 84 | 26.64    | -4,408     |     |     |        |     |    | \$1,174.29- | 59417 |
| NET AMOUNT ADJUSTED: |                 |           |          |          |            |     |     |        |     |    | \$1,174.29- |       |

| TYP                  | REF-#      | OPID | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|-----------|----------|------------|--------------|----------|
| RPK                  | 544-P08543 | C09  | 69/ACT II | 26.64    | -48,300    | \$12,867.12- | 13116501 |
|                      | 544-P08544 | C09  | 53/CBYS   | 26.64    | -10,600    | \$2,823.84-  |          |
| NET AMOUNT ADJUSTED: |            |      |           |          |            | \$15,690.96- |          |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM  | LIQ | 055 GL | RDM | EA | AMT-ADJUST | GL #  |
|----------------------|-----------------|-----------|----------|----------|------------|-----|-----|--------|-----|----|------------|-------|
| 01172-046            | PHOSPHORIC ACID | 75%       | MCKS     | LIQ      | 055 GL     | RDM | EA  |        |     |    |            |       |
| TYP                  | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST |     |     |        |     |    |            |       |
| OH0                  |                 | CUI       | 10/31/84 | 204.93   | -4         |     |     |        |     |    | \$819.72-  | 59417 |
| NET AMOUNT ADJUSTED: |                 |           |          |          |            |     |     |        |     |    | \$819.72-  |       |

MCK0062061

PGM: CK02L2IP VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 68  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01172-047            | PHOSPHORIC ACID | 85%       | MCKS               | LIQ      | 055 GL RDM | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 238.99   | -1         | \$238.99-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$238.99-  |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01172-048            | PHOSPHORIC ACID | 75%       | MCKS               | LIQ      | 015 GL CBY | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 58.98    | -1         | \$58.98-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$58.98-   |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01172-049            | PHOSPHORIC ACID | 85%       | MCKS              | LIQ      | 015 GL CBY | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                 | CUI       | 10 31 84 PHYS INV | 67.37    | -4         | \$269.48-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$269.48-  |       |  |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|--------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01183-006            | POTASSIUM CHLORIDE | STANDARD  | MCKS               | GRAN     | 100 LB BAG | EA         |       |  |  |
| TYP                  | REF-#              | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                    | CUI       | 10/31/84 INVENTORY | 7.25     | -1         | \$7.25-    | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                    |           |                    |          |            | \$7.25-    |       |  |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01189-001            | NITRIC ACID | 42 BE     | *                 | LIQ      | 001 GL BLK | LB         |       |  |  |
| TYP                  | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |             | CUI       | 10 31 84 PHYS INV | 8.82     | -6,175     | \$544.64-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |             |           |                   |          |            | \$544.64-  |       |  |  |

| TYP                  | REF-#      | OPID | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|---------------------|----------|------------|-------------|----------|
| RPK                  | 544-P08367 | CUH  | 89 DRS              | 8.82     | -15,130    | \$1,334.47- | 13116501 |
|                      | 544-P08372 | CUH  | 53 DRS              | 8.82     | -31,800    | \$2,804.76- |          |
|                      | 544-P08478 | CO9  | 16 DRS              | 8.82     | -1,520     | \$134.06-   |          |
|                      | 544-P08631 | CO9  | 24/8.5 GL PAIL POLY | 8.82     | -2,280     | \$201.10-   |          |
|                      | 544-P08632 | CO9  | 50/POLY DRS         | 8.82     | -30,000    | \$2,646.00- |          |
| NET AMOUNT ADJUSTED: |            |      |                     |          |            | \$7,120.39- |          |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM        |       |  |
|-----------|-------------|-----------|-------------------|----------|---------------|-----------|-------|--|
| 01189-004 | NITRIC ACID | 38 BE     | *                 | LIQ      | 001 LB BLK LB |           |       |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHD       |             | CUI       | 10 31 84 PHYS INV | 6.63     | +1,374        | \$91.10   | 59417 |  |

NET AMOUNT ADJUSTED: \$91.10

| TYP | REF-#      | OPID | REASON      | AVG-COST | QTY-ADJST | AMT-ADJST | GL #     |
|-----|------------|------|-------------|----------|-----------|-----------|----------|
| RPK | 544-P08479 | C09  | 81/8GL CBYS | 6.63     | -7,290    | \$483.33- | 13116501 |

NET AMOUNT ADJUSTED: \$483.33-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|-------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01189-009 | NITRIC ACID | 42 BE     | MCKS              | LIQ      | 055 GL RDM EA |            |       |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST  | GL #  |  |
| OHD       |             | CUI       | 10 31 84 PHYS INV | 69.83    | +28           | \$1,955.24 | 59417 |  |

NET AMOUNT ADJUSTED: \$1,955.24

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM        |       |  |
|-----------|-------------|-----------|-----------------|----------|---------------|-----------|-------|--|
| 01189-010 | NITRIC ACID | 42 BE     | MCKS            | LIQ      | 015 GL RDM EA |           |       |  |
| TYP       | REF-#       | OPID      | REASON          | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHD       |             | CUI       | SHIPPED TO BRCH | 20.01    | +1            | \$20.01   | 59417 |  |

NET AMOUNT ADJUSTED: \$20.01

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM        |       |  |
|-----------|-------------|-----------|-------------------|----------|---------------|-----------|-------|--|
| 01189-012 | NITRIC ACID | 38 BE     | MCKS              | LIQ      | 055 GL RDM EA |           |       |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHD       |             | CUI       | 10 31 84 PHYS INV | 55.57    | -2            | \$111.14- | 59417 |  |

NET AMOUNT ADJUSTED: \$111.14-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM        |       |  |
|-----------|-------------|-----------|-------------------|----------|---------------|-----------|-------|--|
| 01189-013 | NITRIC ACID | 38 BE     | MCKS              | LIQ      | 008 GL RDM EA |           |       |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHD       |             | CUI       | 10 31 84 PHYS INV | 8.75     | -3            | \$26.25-  | 59417 |  |

NET AMOUNT ADJUSTED: \$26.25-

| PROD-CD   | PROD-NAME            | QUALIFIER  | GRAD              | FORM     | -PACKAGE--    | UM        |       |  |
|-----------|----------------------|------------|-------------------|----------|---------------|-----------|-------|--|
| 01193-005 | GLYCOL ETHER ACETATE | CELLOSOLVE | MCKS              | LIQ      | 055 GL DRM EA |           |       |  |
| TYP       | REF-#                | OPID       | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHD       |                      | CUI        | 10 31 84 PHYS INV | 291.91   | +1            | \$291.91  | 59417 |  |

NET AMOUNT ADJUSTED: \$291.91

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-------------------|-----------|--------------------|----------|---------------|------------|-------|--|--|
| 01212-004            | PERCHLOROETHYLENE | SVG       | *                  | LIQ      | 001 GL BLK LB |            |       |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10/31/84 INVENTORY | 27.83    | -151          | \$42.02-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |               | \$42.02-   |       |  |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|--------|----------|------------|-------------|----------|
| RPK                  | 544-P08464 | C09  | 25 DRS | 27.83    | -17,850    | \$4,967.66- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$4,967.66- |          |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-------------------|-----------|--------------------|----------|---------------|------------|-------|--|--|
| 01212-005            | PERCHLOROETHYLENE |           | *                  | LIQ      | 001 LB BLK LB |            |       |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10/31/84 INVENTORY | 27.59    | -219          | \$60.42-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |               | \$60.42-   |       |  |  |

| TYP                  | REF-#      | OPID | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|------------------|----------|------------|-------------|----------|
| RPK                  | 544-P08341 | CUH  | FLOKEM #2 800 GL | 27.59    | -1,446     | \$398.95-   | 13116501 |
|                      | 544-P08594 | C09  | 25/17E           | 27.59    | -17,850    | \$4,924.82- |          |
| NET AMOUNT ADJUSTED: |            |      |                  |          |            | \$5,323.77- |          |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-------------------|-----------|-------------------|----------|---------------|------------|-------|--|--|
| 01212-011            | PERCHLOROETHYLENE | SVG       | MCKS              | LIQ      | 055 GL DRM EA |            |       |  |  |
| TYP                  | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10 31 84 PHYS INV | 212.32   | -1            | \$212.32-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |               | \$212.32-  |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-------------------|-----------|--------------------|----------|---------------|------------|-------|--|--|
| 01223-001            | DIETHYLENE GLYCOL |           | *                  | LIQ      | 001 GL BLK LB |            |       |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10/31/84 INVENTORY | 23.40    | -280          | \$65.52-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |               | \$65.52-   |       |  |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|--------|----------|------------|-------------|----------|
| RPK                  | 544-P08370 | CUH  | 27 DRS | 23.40    | -14,040    | \$3,285.36- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$3,285.36- |          |

MCK0062064

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01223-007            | DIETHYLENE GLYCOL |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10/31/84 INVENTORY | 147.95   | +2         | \$295.90   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |            | \$295.90   |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|-----------------|-----------|--------|----------|------------|--------------|----------|--|--|
| 01224-001            | HEXYLENE GLYCOL |           | *      | LIQ      | 001 GL     | BLK LB       |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08369      | CUH       | 68 DRS | 60.79    | -29,560    | \$17,969.52- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$17,969.52- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01224-002            | HEXYLENE GLYCOL |           | MCKS              | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                 | CUI       | 10 31 84 PHYS INV | 271.18   | -1         | \$271.18-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$271.18-  |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01225-001            | ETHYLENE GLYCOL |           | *                  | LIQ      | 001 GL     | BLK LB      |       |  |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OH0                  |                 | CUI       | 10/31/84 INVENTORY | 25.23    | -27,456    | \$6,927.15- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$6,927.15- |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01225-012            | ETHYLENE GLYCOL |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                 | CUI       | 10/31/84 INVENTORY | 145.26   | -2         | \$290.52-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$290.52-  |       |  |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|--------------------|-----------|--------|----------|------------|-------------|----------|--|--|
| 01226-004            | DIPROPYLENE GLYCOL |           | *      | LIQ      | 001 GL     | BLK LB      |          |  |  |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08551         | C09       | 45/17E | 42.91    | -21,100    | \$9,054.01- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                    |           |        |          |            | \$9,054.01- |          |  |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM |           |  |       |
|----------------------|--------------------|-----------|--------------------|----------|------------|----|-----------|--|-------|
| 01226-005            | DIPROPYLENE GLYCOL |           | MCKS               | LIQ      | 055 GL DRM | EA |           |  |       |
| TYP                  | REF-#              | OPID      | REASON             | AVG-COST | QTY-ADJST  |    | AMT-ADJST |  | GL #  |
| OH0                  |                    | CUI       | 10/31/84 INVENTORY | 226.61   | -1         |    | \$226.61- |  | 59417 |
| NET AMOUNT ADJUSTED: |                    |           |                    |          |            |    | \$226.61- |  |       |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM |            |  |       |
|----------------------|--------------------|-----------|--------------------|----------|------------|----|------------|--|-------|
| 01229-003            | METHYLENE CHLORIDE |           | *                  | LIQ      | 001 GL BLK | LB |            |  |       |
| TYP                  | REF-#              | OPID      | REASON             | AVG-COST | QTY-ADJST  |    | AMT-ADJST  |  | GL #  |
| OH0                  |                    | CUI       | 10/31/84 INVENTORY | 31.51    | +4,055     |    | \$1,277.73 |  | 59417 |
| NET AMOUNT ADJUSTED: |                    |           |                    |          |            |    | \$1,277.73 |  |       |

| TYP                  | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJST | AMT-ADJST    | GL #     |
|----------------------|------------|------|-----------------|----------|-----------|--------------|----------|
| RPK                  | 544-P08341 | CUH  | FLOKEM #2 800GL | 31.51    | -2,262    | \$712.76-    | 13116501 |
|                      | 544-P08351 | CUH  | 30 CUST DRMS    | 31.51    | -15,330   | \$4,830.48-  |          |
|                      | 544-P08371 | CUH  | 500G XYZ BLEND  | 31.51    | -4,081    | \$1,285.92-  |          |
|                      | 544-P08373 | CUH  | 1500G 1000 WASH | 31.51    | -3,237    | \$1,019.98-  |          |
|                      | 544-P08392 | CUI  | 98 DRS          | 31.51    | -54,196   | \$17,077.16- |          |
|                      | 544-P08608 | CO9  | 102/17E         | 31.51    | -62,424   | \$19,669.80- |          |
| NET AMOUNT ADJUSTED: |            |      |                 |          |           | \$44,596.10- |          |

| PROD-CD              | PROD-NAME          | QUALIFIER  | GRAD     | FORM     | -PACKAGE-- | UM |           |  |       |
|----------------------|--------------------|------------|----------|----------|------------|----|-----------|--|-------|
| 01229-012            | METHYLENE CHLORIDE | VAPOR DGRS | *        | LIQ      | 001 LB BLK | LB |           |  |       |
| TYP                  | REF-#              | OPID       | REASON   | AVG-COST | QTY-ADJST  |    | AMT-ADJST |  | GL #  |
| OH0                  |                    | CUI        | VARIANCE | 32.75    | -10        |    | \$3.28-   |  | 59417 |
| NET AMOUNT ADJUSTED: |                    |            |          |          |            |    | \$3.28-   |  |       |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM |             |  |       |
|----------------------|--------------------|-----------|-------------------|----------|------------|----|-------------|--|-------|
| 01229-021            | METHYLENE CHLORIDE |           | MCKS              | LIQ      | 055 GL DRM | EA |             |  |       |
| TYP                  | REF-#              | OPID      | REASON            | AVG-COST | QTY-ADJST  |    | AMT-ADJST   |  | GL #  |
| OH0                  |                    | CUI       | 10 31 84 PHYS INV | 218.72   | -31        |    | \$6,780.32- |  | 59417 |
| NET AMOUNT ADJUSTED: |                    |           |                   |          |            |    | \$6,780.32- |  |       |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM |           |  |       |
|----------------------|--------------------|-----------|-------------------|----------|------------|----|-----------|--|-------|
| 01229-023            | METHYLENE CHLORIDE |           | MCKS              | LIQ      | 005 GL PL  | EA |           |  |       |
| TYP                  | REF-#              | OPID      | REASON            | AVG-COST | QTY-ADJST  |    | AMT-ADJST |  | GL #  |
| OH0                  |                    | CUI       | 10 31 84 PHYS INV | 21.70    | -3         |    | \$65.10-  |  | 59417 |
| NET AMOUNT ADJUSTED: |                    |           |                   |          |            |    | \$65.10-  |  |       |

MCK0062066

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|--------------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01229-029            | METHYLENE CHLORIDE |           | MCKS               | LIQ      | 055 GL NDM | EA          |       |  |  |
| TYP                  | REF-#              | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD                  |                    | CUI       | 10/31/84 INVENTORY | 214.75   | -8         | \$1,718.00- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                    |           |                    |          |            | \$1,718.00- |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01233-001            | XYLENE    |           | *                 | LIQ      | 001 GL BLK | LB         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 22.04    | -147       | \$32.40-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$32.40-   |       |  |  |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|----------------|----------|------------|-------------|----------|
| RPK                  | 544-P08371 | CUH  | 500G XYZ BLEND | 22.04    | -542       | \$119.46-   | 13116501 |
|                      | 544-P08535 | C09  | 50/17E         | 22.04    | -19,890    | \$4,383.76- |          |
|                      | 544-P08557 | C09  | BLEND          | 22.04    | -1,559     | \$343.60-   |          |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$4,846.82- |          |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01233-002            | XYLENE    |           | MCKS               | LIQ      | 054 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10/31/84 INVENTORY | 105.20   | -1         | \$105.20-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$105.20-  |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01236-002            | TOLUENE   |           | *                 | LIQ      | 001 GL BLK | LB         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 20.34    | +8,077     | \$1,642.86 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$1,642.86 |       |  |  |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
|----------------------|------------|------|----------------|----------|------------|------------|----------|
| RPK                  | 544-P08371 | CUH  | 500G XYZ BLEND | 20.34    | -542       | \$110.24-  | 13116501 |
|                      | 544-P08557 | C09  | BLEND          | 20.34    | -2,447     | \$497.72-  |          |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$607.96-  |          |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01236-004            | TOLUENE   |           | MCKS               | LIQ      | 054 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10/31/84 INVENTORY | 99.68    | -3         | \$299.04-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$299.04-  |       |  |  |

MCK0062067

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CH10G10

10/84

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-------------------|-----------|-------------------|----------|------------|-------------|-------|--|--|
| 01238-001 | ISOPROPYL ALCOHOL | 99%       | *                 | LIQ      | 001 LB BLK | LB          |       |  |  |
| TYP       | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OH0       |                   | CUI       | 10 31 84 PHYS INV | 24.73    | -4,790     | \$1,184.57- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$1,184.57-

| TYP | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|---------------|----------|------------|-------------|----------|
| RPK | 544-P08299 | CUH  | 50/RECON DRS  | 24.73    | -18,105    | \$4,477.37- | 13116501 |
|     | 544-P08335 | CUH  | SANBAR 10 DRS | 24.73    | -432       | \$106.83-   |          |
|     | 544-P08463 | CO9  | 50 PAILS      | 24.73    | -1,683     | \$416.21-   |          |
|     | 544-P08496 | CO9  | 75/17E        | 24.73    | -27,158    | \$6,716.17- |          |
|     | 544-P08557 | CO9  | BLEND         | 24.73    | -7,840     | \$1,938.83- |          |
|     | 544-P08641 | CO9  | 100/17E       | 24.73    | -36,210    | \$8,954.73- |          |
|     | 544-P08671 | CO9  | 54/5GL CANS   | 24.73    | -1,718     | \$424.86-   |          |

NET AMOUNT ADJUSTED: \$23,035.00-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-------------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01238-005 | ISOPROPYL ALCOHOL | 99%       | MCKS               | LIQ      | 054 GL DRM | EA          |       |  |  |
| TYP       | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OH0       |                   | CUI       | 10/31/84 INVENTORY | 104.71   | -16        | \$1,675.36- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$1,675.36-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|-----------|-------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01238-007 | ISOPROPYL ALCOHOL | 99%       | MCKS               | LIQ      | 005 GL PL  | EA         |       |  |  |
| TYP       | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0       |                   | CUI       | 10/31/84 INVENTORY | 12.79    | -3         | \$38.37-   | 59417 |  |  |

NET AMOUNT ADJUSTED: \$38.37-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|-----------|-------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01240-018 | TRICHLOROETHYLENE |           | MCKS              | LIQ      | 054 GL DRM | EA         |       |  |  |
| TYP       | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0       |                   | CUI       | PHYS ADJ          | 256.40   | -2         | \$512.80-  | 59417 |  |  |
|           |                   | CUI       | 10 31 84 PHYS INV | 256.40   | +1         | \$256.40   |       |  |  |

NET AMOUNT ADJUSTED: \$256.40-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01241-002 | MORPHOLINE |           | MCKS               | LIQ      | 055 GL DRM | EA          |       |  |  |
| TYP       | REF-#      | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OH0       |            | CUI       | 10/31/84 INVENTORY | 416.36   | -4         | \$1,665.44- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$1,665.44-

MCK0062068

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|------------|-----------|--------|----------|------------|-------------|----------|--|--|
| 01241-003            | MORPHOLINE |           | *      | LIQ      | 001 GL BLK | LB          |          |  |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08613 | C09       | 18/17E | 87.08    | -7,740     | \$6,739.99- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |            | \$6,739.99- |          |  |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|-------------|-----------|-------------------|----------|------------|--------------|----------|--|--|
| 01242-003            | FORMIC ACID | 90%       | *                 | LIQ      | 001 GL BLK | LB           |          |  |  |
| TYP                  | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| OHD                  |             | CUI       | 10 31 84 PHYS INV | 37.34    | -2,160     | \$806.54-    | 59417    |  |  |
| NET AMOUNT ADJUSTED: |             |           |                   |          |            | \$806.54-    |          |  |  |
| TYP                  | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08567  | C09       | 74/ACT II         | 37.34    | -150       | \$56.01-     | 13116501 |  |  |
|                      | 544-P08567  | C09       | 74 ACT II         | 37.34    | -39,550    | \$14,767.97- |          |  |  |
| NET AMOUNT ADJUSTED: |             |           |                   |          |            | \$14,823.98- |          |  |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01242-013            | FORMIC ACID | 90%       | MCKS               | LIQ      | 055 GL RDM | EA         |       |  |  |
| TYP                  | REF-#       | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |             | CUI       | 10/31/84 INVENTORY | 213.79   | +2         | \$427.58   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |             |           |                    |          |            | \$427.58   |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|--|--|
| 01245-011            | TRIETHANOLAMINE | 85%       | *      | LIQ      | 001 LB BLK | LB          |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08420      | C09       | 37 DRS | 40.50    | -18,380    | \$7,443.90- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$7,443.90- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01245-020            | TRIETHANOLAMINE | 85%       | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                 | CUI       | 10 31 84 PHYS INV | 227.10   | +5         | \$1,135.50 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                   |          |            | \$1,135.50 |       |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01248-003            | ISOBUTYL ALCOHOL |           | MCKS               | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#            | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                  | CUI       | 10/31/84 INVENTORY | 114.94   | -1         | \$114.94-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |                    |          |            | \$114.94-  |       |  |  |

MCK0062069

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD               | FORM | -PACKAGE-- | UM         |             |       |  |
|----------------------|--------------------|-----------|--------------------|------|------------|------------|-------------|-------|--|
| 01255-001            | TRIETHYLENE GLYCOL |           | *                  | LIQ  | 001 GL BLK | LB         |             |       |  |
| TYP                  | REF-#              | OPID      | REASON             |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                    | CUI       | 10/31/84 INVENTORY |      | 30.29      | -8,086     | \$2,449.25- | 59417 |  |
| NET AMOUNT ADJUSTED: |                    |           |                    |      |            |            | \$2,449.25- |       |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD             | FORM | -PACKAGE-- | UM         |            |       |  |
|----------------------|--------------------|-----------|------------------|------|------------|------------|------------|-------|--|
| 01255-006            | TRIETHYLENE GLYCOL |           | MCKS             | LIQ  | 055 GL DRM | EA         |            |       |  |
| TYP                  | REF-#              | OPID      | REASON           |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                    | CUI       | SHIPPED TO BRCH  |      | 195.39     | +8         | \$1,563.12 | 59417 |  |
|                      |                    | CUI       | SHIPPED -C PREV. |      | 195.39     | +1         | \$195.39   |       |  |
| NET AMOUNT ADJUSTED: |                    |           |                  |      |            |            | \$1,758.51 |       |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD               | FORM | -PACKAGE-- | UM         |              |          |  |
|----------------------|-----------------------|-----------|--------------------|------|------------|------------|--------------|----------|--|
| 01260-009            | 1,1,1 TRICHLOROETHANE | CHLORO SM | MSS                | LIQ  | 001 GL BLK | LB         |              |          |  |
| TYP                  | REF-#                 | OPID      | REASON             |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| OHD                  |                       | CUI       | 10/31/84 INVENTORY |      | 38.11      | -32,816    | \$12,506.18- | 59417    |  |
| NET AMOUNT ADJUSTED: |                       |           |                    |      |            |            | \$12,506.18- |          |  |
| TYP                  | REF-#                 | OPID      | REASON             |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08521            | C09       | 20/5GL FAILS       |      | 38.11      | -1,122     | \$427.59-    | 13116501 |  |
| NET AMOUNT ADJUSTED: |                       |           |                    |      |            |            | \$427.59-    |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD               | FORM | -PACKAGE-- | UM         |             |          |  |
|----------------------|-----------------------|-----------|--------------------|------|------------|------------|-------------|----------|--|
| 01260-022            | 1,1,1 TRICHLOROETHANE | VDG       | *                  | LIQ  | 001 GL BLK | LB         |             |          |  |
| TYP                  | REF-#                 | OPID      | REASON             |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| OHD                  |                       | CUI       | 10/31/84 INVENTORY |      | 37.90      | +20,507    | \$7,772.15  | 59417    |  |
| NET AMOUNT ADJUSTED: |                       |           |                    |      |            |            | \$7,772.15  |          |  |
| TYP                  | REF-#                 | OPID      | REASON             |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P08335            | CUH       | SANBAR BLEND 10DR  |      | 37.90      | -4,767     | \$1,806.69- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                       |           |                    |      |            |            | \$1,806.69- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD              | FORM | -PACKAGE-- | UM         |             |       |  |
|----------------------|-----------------------|-----------|-------------------|------|------------|------------|-------------|-------|--|
| 01260-027            | 1,1,1 TRICHLOROETHANE | VDG       | MCKS              | LIQ  | 054 GL DRM | EA         |             |       |  |
| TYP                  | REF-#                 | OPID      | REASON            |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                       | CUI       | 10 31 84 PHYS INV |      | 249.73     | -5         | \$1,248.65- | 59417 |  |
| NET AMOUNT ADJUSTED: |                       |           |                   |      |            |            | \$1,248.65- |       |  |

MCK0062070

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|                      |                       |            |                    |          |            |            |       |
|----------------------|-----------------------|------------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME             | QUALIFIER  | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01260-029            | 1,1,1 TRICHLOROETHANE | AEROTHN YT | MCKS               | LIQ      | 055 GL DRM | EA         |       |
| TYP                  | REF-#                 | OPID       | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OH0                  |                       | CUI        | 10/31/84 INVENTORY | 252.82   | -1         | \$252.82-  | 59417 |
| NET AMOUNT ADJUSTED: |                       |            |                    |          |            | \$252.82-  |       |

|                      |                       |           |                    |          |            |             |       |
|----------------------|-----------------------|-----------|--------------------|----------|------------|-------------|-------|
| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |
| 01260-031            | 1,1,1 TRICHLOROETHANE | CHLORO SM | MCKS               | LIQ      | 055 GL DRM | EA          |       |
| TYP                  | REF-#                 | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |
| OH0                  |                       | CUI       | 10/31/84 INVENTORY | 246.42   | -6         | \$1,478.52- | 59417 |
| NET AMOUNT ADJUSTED: |                       |           |                    |          |            | \$1,478.52- |       |

|                      |                 |           |        |          |            |             |          |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|
| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |
| 01265-001            | STYRENE MONOMER |           | *      | LIQ      | 001 GL BLK | LB          |          |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P08475      | C09       | 36 DRS | 33.11    | -14,360    | \$4,754.60- | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$4,754.60- |          |

|                      |           |           |                    |          |            |            |       |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01281-006            | NEODOL    | 25-7      | MCKS               | LIQ      | 440 LB DRM | EA         |       |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OH0                  |           | CUI       | 10/31/84 INVENTORY | 255.11   | -1         | \$255.11-  | 59417 |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$255.11-  |       |

|                      |           |           |                    |          |            |            |       |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01281-009            | NEODOL    | 25-3      | *                  | LIQ      | 001 LB BLK | LB         |       |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OH0                  |           | CUI       | 10/31/84 INVENTORY | 52.32    | -20        | \$10.46-   | 59417 |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$10.46-   |       |

|                      |              |           |          |          |            |            |       |
|----------------------|--------------|-----------|----------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM         |       |
| 01282-020            | CAUSTIC SODA |           | *        | BEAD     | 001 LB BLK | LB         |       |
| TYP                  | REF-#        | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OH0                  |              | CUI       | MTL GAIN | 17.97    | +40,000    | \$7,188.00 | 59417 |
|                      |              | CUI       | MTL GAIN | 17.97    | +5,950     | \$1,069.22 |       |
| NET AMOUNT ADJUSTED: |              |           |          |          |            | \$8,257.22 |       |

|                      |            |      |                   |          |            |              |       |
|----------------------|------------|------|-------------------|----------|------------|--------------|-------|
| TYP                  | REF-#      | OPID | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |
| RCS                  | 544-P07704 | CUI  | VMC 73108 & 73109 | 17.97    | -80,000    | \$14,376.00- | 12492 |
| NET AMOUNT ADJUSTED: |            |      |                   |          |            | \$14,376.00- |       |

MCK0062071

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| TYP | REF-#      | OPID | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|--------------|----------|------------|-------------|----------|
| RPK | 544-P08245 | CO9  | 80 DRS       | 17.97    | -40,000    | \$7,188.00- | 13116501 |
|     | 544-P08401 | CO9  | 68 DRS       | 17.97    | -34,000    | \$6,109.80- |          |
|     | 544-P08434 | CO9  | 80 DRS       | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08448 | CO9  | 80 MCK BOLL  | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08486 | CO9  | 80/BOLL      | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08623 | CO9  | 80/CUST DRS  | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08649 | CO9  | 80/BOLL      | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08663 | CO9  | 80/CUST DRS  | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08666 | CO9  | 80/CUST DRS  | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08667 | CO9  | 80/CUST DRS  | 17.97    | -40,000    | \$7,188.00- |          |
|     | 544-P08669 | CO9  | 7/FLOBINS    | 17.97    | -21,000    | \$3,773.70- |          |
|     | 544-P08698 | CUI  | 16 X 500 MCK | 17.97    | -8,000     | \$1,437.60- |          |
|     | 544-P08709 | CO9  | 80/CUST DR   | 17.97    | -40,000    | \$7,188.00- |          |

NET AMOUNT ADJUSTED: \$83,201.10-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM     | AMT-ADJUST   | GL #  |
|-----------|--------------|-----------|----------|----------|------------|--------|--------------|-------|
| 01282-037 | CAUSTIC SODA |           | MCKS     | BEAD     | 500 LB     | DRM EA |              |       |
| TYP       | REF-#        | OPID      | REASON   | AVG-COST | QTY-ADJUST |        |              |       |
| RCS       | 544-P08649   | CUI       | CRCT VMC | 101.25   | -160       |        | \$16,200.00- | 12492 |

NET AMOUNT ADJUSTED: \$16,200.00-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM     | AMT-ADJUST | GL #  |
|-----------|--------------|-----------|-------------------|----------|------------|--------|------------|-------|
| 01282-038 | CAUSTIC SODA |           | CUST              | BEAD     | 500 LB     | DRM EA |            |       |
| TYP       | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST |        |            |       |
| OH0       |              | CUI       | 10 31 84 PHYS INV | 86.16    | -2         |        | \$172.32-  | 59417 |

NET AMOUNT ADJUSTED: \$172.32-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM     | AMT-ADJUST  | GL #  |
|-----------|--------------|-----------|-------------------|----------|------------|--------|-------------|-------|
| 01282-039 | CAUSTIC SODA |           | MCKS              | BEAD     | 001 EA     | PTK EA |             |       |
| TYP       | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST |        |             |       |
| OH0       |              | CUI       | 10 31 84 PHYS INV | 512.89   | -4         |        | \$2,051.56- | 59417 |

NET AMOUNT ADJUSTED: \$2,051.56-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM     | AMT-ADJUST | GL #  |
|-----------|--------------|-----------|-------------------|----------|------------|--------|------------|-------|
| 01282-041 | CAUSTIC SODA |           | MCKS              | BEAD     | 500 LB     | FDM EA |            |       |
| TYP       | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST |        |            |       |
| OH0       |              | CUI       | 10 31 84 PHYS INV | 98.96    | +2         |        | \$197.92   | 59417 |

NET AMOUNT ADJUSTED: \$197.92

MCK0062072

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM        |       |  |
|-----------|--------------|-----------|--------------------------|----------|------------|-----------|-------|--|
| 01282-051 | CAUSTIC SODA | CONSIGNED | *                        | BEAD     | 001 LB     | BLK LB    |       |  |
| TYP       | REF-#        | OPID      | REASON                   | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH0       |              | CUI       | VMC 73127/P08401         | 0.01     | -40,000    | \$4.00-   | 59417 |  |
|           |              | CUI       | VMC 73116/P8070-BINS     | 0.01     | -32,000    | \$3.20-   |       |  |
|           |              | CUI       | VMC 73123/P8289-CUST DR  | 0.01     | -42,000    | \$4.20-   |       |  |
|           |              | CUI       | VMC 73128/P08434-        | 0.01     | -34,000    | \$3.40-   |       |  |
|           |              | CUI       | VMC 73121/P08243-FIBRE   | 0.01     | -9,500     | \$0.95-   |       |  |
|           |              | CUI       | VMC 73124/P08289-CUST DR | 0.01     | -40,000    | \$4.00-   |       |  |
|           |              | CUI       | VMC 73128, RP08433       | 0.01     | -40,000    | \$4.00-   |       |  |
|           |              | CUI       | CRCT OH0 OF 9/84         | 0.01     | +40,000    | \$4.00    |       |  |
|           |              | CUI       | VMC 73127/P08400         | 0.01     | -34,000    | \$3.40-   |       |  |
|           |              | CUI       | VMC 73131/P08623         | 0.01     | -40,000    | \$4.00-   |       |  |
|           |              | CUI       | REV.DUP P08434/P08401    | 0.01     | +74,000    | \$7.40    |       |  |

NET AMOUNT ADJUSTED: \$19.75-

| TYP | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJST | AMT-ADJST | GL #     |
|-----|------------|------|----------------|----------|-----------|-----------|----------|
| RPK | 544-P08135 | CUI  | VMC 73114/BINS | 0.01     | -42,000   | \$4.20-   | 13116501 |
|     | 544-P08452 | CO9  | 15/FLO BINS    | 0.01     | -45,000   | \$4.50-   |          |
|     | 544-P08507 | CUI  | VMC 73126      | 0.01     | -45,000   | \$4.50-   |          |
|     | 544-P08510 | CUI  | VMC 73125      | 0.01     | -40,000   | \$4.00-   |          |
|     | 544-P08511 | CUI  | VMC 73120      | 0.01     | -40,000   | \$4.00-   |          |
|     | 544-P08512 | CUI  | VMC 73115      | 0.01     | -40,000   | \$4.00-   |          |
|     | 544-P08513 | CUI  | VMC 73118      | 0.01     | -40,000   | \$4.00-   |          |
|     | 544-P08549 | CO9  | 80 BILL        | 0.01     | -40,000   | \$4.00-   |          |

NET AMOUNT ADJUSTED: \$33.20-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM        |       |  |
|-----------|--------------|-----------|-------------------|----------|------------|-----------|-------|--|
| 01282-052 | CAUSTIC SODA | CONSIGNED | MCKS              | BEAD     | 500 LB     | DRM EA    |       |  |
| TYP       | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH0       |              | CUI       | 10 31 84 PHYS INV | 0.05     | +162       | \$8.10    | 59417 |  |

NET AMOUNT ADJUSTED: \$8.10

| TYP | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJST | AMT-ADJST | GL #  |
|-----|------------|------|-----------------|----------|-----------|-----------|-------|
| RCS | 544-P08510 | CUI  | VMC 73125 SHPMT | 0.05     | -80       | \$4.00-   | 12492 |
|     | 544-P08511 | CUI  | VMC 73130       | 0.05     | -80       | \$4.00-   |       |

NET AMOUNT ADJUSTED: \$8.00-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|-----------|--------------|-----------|----------------|----------|------------|-----------|-------|--|
| 01282-053 | CAUSTIC SODA | CONSIGNED | CUST           | BEAD     | 001 EA     | PTK EA    |       |  |
| TYP       | REF-#        | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| RCS       | 544-P08135   | CUI       | VMC 73120      | 0.30     | -14        | \$4.20-   | 12492 |  |
|           | 544-P08507   | CUI       | VMC 73126/SHMT | 0.30     | -15        | \$4.50-   |       |  |
|           | 544-P08507   | CO9       | VMC73132       | 0.30     | -15        | \$4.50-   |       |  |

NET AMOUNT ADJUSTED: \$13.20-

MCK0062073

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM           |          |  |  |
|----------------------|--------------|-----------|-------------------|----------|---------------|--------------|----------|--|--|
| 01316-001            | TRITON N-101 |           | *                 | LIQ      | 001 GL BLK LB |              |          |  |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| OHD                  |              | CUI       | 10 31 84 PHYS INV | 39.34    | -19,182       | \$7,354.38-  | 59417    |  |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |               | \$7,354.38-  |          |  |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08354   | CUH       | 75 DRMS           | 38.34    | -36,000       | \$13,802.40- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |               | \$13,802.40- |          |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|--------------|-----------|--------------------|----------|---------------|------------|-------|--|--|
| 01316-003            | TRITON N-101 |           | MCKS               | LIQ      | 055 GL DRM EA |            |       |  |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD                  |              | CUI       | 10/31/84 INVENTORY | 209.48   | -1            | \$209.48-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |               | \$209.48-  |       |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM           |          |  |  |
|----------------------|--------------|-----------|-------------------|----------|---------------|--------------|----------|--|--|
| 01336-001            | TRITON X-100 |           | *                 | LIQ      | 001 GL BLK LB |              |          |  |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| OHD                  |              | CUI       | 10 31 84 PHYS INV | 60.99    | +13,848       | \$8,445.90   | 59417    |  |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |               | \$8,445.90   |          |  |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08355   | CUH       | 75 DRS            | 60.99    | -36,000       | \$21,956.40- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |               | \$21,956.40- |          |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|--------------|-----------|-------------------|----------|---------------|------------|-------|--|--|
| 01336-003            | TRITON X-100 |           | MCKS              | LIQ      | 055 GL DRM EA |            |       |  |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD                  |              | CUI       | 10 31 84 PHYS INV | 312.85   | -2            | \$625.70-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |               | \$625.70-  |       |  |  |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|---------------|-----------|--------------------|----------|---------------|-------------|----------|--|--|
| 01361-001            | SULFURIC ACID | 66 BE     | *                  | LIQ      | 001 LB BLK LB |             |          |  |  |
| TYP                  | REF-#         | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| OHD                  |               | CUI       | 10/31/84 INVENTORY | 2.07     | -29,137       | \$603.14-   | 59417    |  |  |
| NET AMOUNT ADJUSTED: |               |           |                    |          |               | \$603.14-   |          |  |  |
| TYP                  | REF-#         | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08323    | CUH       | 100/700# POLY DRS  | 2.07     | -70,000       | \$1,449.00- | 13116501 |  |  |
|                      | 544-P08461    | CUI       | 123 CBYS           | 2.07     | -27,675       | \$572.87-   |          |  |  |

MCK0062074

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G10

10/84

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |           |      |         |             |
|------------|-----|-----------|------|---------|-------------|
| 544-P08644 | C09 | 82/ACT II | 2.07 | -18,450 | \$381.92-   |
| 544-P08645 | C09 | 70/ACT II | 2.07 | -49,000 | \$1,014.30- |

NET AMOUNT ADJUSTED: \$3,418.09-

| PROD-CD   | PROD-NAME     | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|---------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01361-002 | SULFURIC ACID | 96%       | *                 | LIQ      | 001 LB BLK LB |            |       |  |
| TYP       | REF-#         | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD       |               | CUI       | 10 31 84 PHYS INV | 2.03     | +35,513       | \$720.91   | 59417 |  |

NET AMOUNT ADJUSTED: \$720.91

| TYP | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|----------------|----------|------------|-------------|----------|
| RPK | 544-P08365 | CUH  | BULK 66        | 2.03     | -99,000    | \$2,009.70- | 13116501 |
|     | 544-P08393 | CUI  | 120 DRS        | 2.03     | -84,000    | \$1,705.20- |          |
|     | 544-P08465 | CUI  |                | 2.03     | -99,999    | \$2,029.98- |          |
|     | 544-P08465 | CUI  |                | 2.03     | -1         | \$0.02-     |          |
|     | 544-P08519 | C09  | 170/ACT II     | 2.03     | -59,500    | \$1,207.85- |          |
|     | 544-P08519 | C09  | 170/ACT II     | 2.03     | -59,500    | \$1,207.85- |          |
|     | 544-P08539 | CUI  | TRANSFR TO 66  | 2.03     | -50,000    | \$1,015.00- |          |
|     | 544-P08539 | CUI  | TRANSFR TO 66  | 2.03     | -50,000    | \$1,015.00- |          |
|     | 544-P08674 | CUG  | FROM 96% TO 66 | 2.03     | -99,000    | \$2,009.70- |          |

NET AMOUNT ADJUSTED: \$12,200.30-

| PROD-CD   | PROD-NAME     | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM          |       |  |
|-----------|---------------|-----------|-------------------|----------|---------------|-------------|-------|--|
| 01361-013 | SULFURIC ACID | 66 BE     | MCKS              | LIQ      | 055 GL RDM EA |             |       |  |
| TYP       | REF-#         | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OHD       |               | CUI       | S/B DRUMS         | 33.78    | -123          | \$4,154.94- | 59417 |  |
|           |               | CUI       | 10 31 84 PHYS INV | 33.78    | -122          | \$4,121.16- |       |  |

NET AMOUNT ADJUSTED: \$8,276.10-

| PROD-CD   | PROD-NAME     | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|---------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01361-014 | SULFURIC ACID | 66 BE     | MCKS              | LIQ      | 015 GL CBY EA |            |       |  |
| TYP       | REF-#         | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD       |               | CUI       | RCD AS DRUMS      | 11.15    | +123          | \$1,371.45 | 59417 |  |
|           |               | CUI       | RIGHT P.C.-       | 11.15    | +82           | \$914.30   |       |  |
|           |               | CUI       | 10 31 84 PHYS INV | 11.15    | +2            | \$22.30    |       |  |

NET AMOUNT ADJUSTED: \$2,308.05

| PROD-CD   | PROD-NAME     | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|---------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01361-018 | SULFURIC ACID | 66 BE     | MCKS              | LIQ      | 015 GL DRM EA |            |       |  |
| TYP       | REF-#         | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD       |               | CUI       | WRNG P.C.-S/B CBY | 11.26    | -82           | \$923.32-  | 59417 |  |

NET AMOUNT ADJUSTED: \$923.32-

MCK0062075

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|--|--|
| 01369-001            | N-BUTYL ALCOHOL |           | *      | LIQ      | 001 GL BLK | LB          |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08406      | CUI       | 10 DRS | 30.76    | -3,480     | \$1,070.45- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$1,070.45- |          |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01370-002            | SEC-BUTYL ALCOHOL |           | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHQ                  |                   | CUI       | 10 31 84 PHYS INV | 131.37   | +1         | \$131.37   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |            | \$131.37   |       |  |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|----------------------|-----------|---------------------|----------|------------|-------------|-------|--|--|
| 01377-001            | CAUSTIC SODA, LIQUID | 50X       | *                   | LIQ      | 001 GL BLK | LB          |       |  |  |
| TYP                  | REF-#                | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHQ                  |                      | CUI       | CRCT DRW DWN P06681 | 7.12     | +313       | \$22.29     | 59417 |  |  |
|                      |                      | CUI       | CRCT DRW DWN P05839 | 7.12     | +9,395     | \$668.92    |       |  |  |
|                      |                      | CUI       | CRCT DRW DWN P06700 | 7.12     | +5,645     | \$401.92    |       |  |  |
|                      |                      | CUI       | 10 31 84 PHYS INV   | 7.12     | -96,791    | \$6,891.52- |       |  |  |
| NET AMOUNT ADJUSTED: |                      |           |                     |          |            | \$5,798.39- |       |  |  |

| TYP | REF-#      | OPID | REASON                    | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|---------------------------|----------|------------|-------------|----------|
| RPK | 544-P08317 | CUH  | 7940# BULK/MCDONNEL DOUGL | 7.12     | -2,388     | \$170.03-   | 13116501 |
|     | 544-P08318 | CUH  | 3800 GL                   | 7.12     | -21,914    | \$1,560.28- |          |
|     | 544-P08333 | CUH  | 110 ACT II                | 7.12     | -38,384    | \$2,732.94- |          |
|     | 544-P08334 | CUH  | 40000 CHELACLEAN          | 7.12     | -17,658    | \$1,257.25- |          |
|     | 544-P08336 | CUH  | 50 RECON DRS              | 7.12     | -17,447    | \$1,242.23- |          |
|     | 544-P08395 | CUH  | CHELACLEAN 103            | 7.12     | -18,930    | \$1,347.82- |          |
|     | 544-P08405 | CUI  | 3800 GL                   | 7.12     | -21,824    | \$1,553.87- |          |
|     | 544-P08413 | CUI  | 4000 GL                   | 7.12     | -24,626    | \$1,753.37- |          |
|     | 544-P08423 | C09  | 126 DRS                   | 7.12     | -43,967    | \$3,130.45- |          |
|     | 544-P08446 | CUI  | 3000 GLS                  | 7.12     | -10,189    | \$725.46-   |          |
|     | 544-P08460 | C09  | BLEND 3000 GL             | 7.12     | -20,768    | \$1,478.68- |          |
|     | 544-P08488 | C09  | BLEND W13829              | 7.12     | -2,554     | \$181.84-   |          |
|     | 544-P08490 | CUI  | CRCT P08460               | 7.12     | -1         | \$0.07-     |          |
|     | 544-P08494 | CUI  | CRCT RCT P08446           | 7.12     | -1         | \$0.07-     |          |
|     | 544-P08498 | C09  | 150/ACT II                | 7.12     | -52,342    | \$3,726.75- |          |
|     | 544-P08522 | C09  | 19120/TT                  | 7.12     | -3,071     | \$218.66-   |          |
|     | 544-P08536 | C09  | 120/17E                   | 7.12     | -41,874    | \$2,981.43- |          |
|     | 544-P08552 | C09  | BLEND                     | 7.12     | -21,781    | \$1,550.81- |          |
|     | 544-P08583 | C09  | BLEND                     | 7.12     | -1         | \$0.07-     |          |
|     | 544-P08597 | C09  | BLEND                     | 7.12     | -10,147    | \$722.47-   |          |
|     | 544-P08602 | C09  | BLEACH/AJAX               | 7.12     | -8,206     | \$584.27-   |          |
|     | 544-P08646 | C09  | CHELACLEAN                | 7.12     | -19,172    | \$1,365.05- |          |
|     | 544-P08647 | C09  | BLEND                     | 7.12     | -22,086    | \$1,572.52- |          |
|     | 544-P08651 | C09  | BLEND                     | 7.12     | -4,017     | \$286.01-   |          |
|     | 544-P08672 | C09  | 104/ACT II                | 7.12     | -36,291    | \$2,583.92- |          |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

544-P08673 C09 BLEND 7.12 -17,524 \$1,247.71-  
NET AMOUNT ADJUSTED: \$33,974.03-

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-004 CAUSTIC SODA, LIQUID 50% M.C. \* LIQ 001 GL BLK LB  
TYP REF-# OPID REASON AVG-COST QTY-ADJUST AMT-ADJUST GL #  
OHD CUI 10 31 84 PHYS INV 9.74 -1,439 \$140.16- 59417  
NET AMOUNT ADJUSTED: \$140.16-

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-005 CAUSTIC SODA, LIQUID 50% MCKS LIQ 055 GL RDM EA  
TYP REF-# OPID REASON AVG-COST QTY-ADJUST AMT-ADJUST GL #  
OHD CUI 10/31/84 INVENTORY 43.50 +13 \$565.50 59417  
NET AMOUNT ADJUSTED: \$565.50

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-006 CAUSTIC SODA, LIQUID 50% MCKS LIQ 055 GL DRM EA  
TYP REF-# OPID REASON AVG-COST QTY-ADJUST AMT-ADJUST GL #  
OHD CUI 10/31/84 INVENTORY 47.49 -1 \$47.49- 59417  
NET AMOUNT ADJUSTED: \$47.49-

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-009 CAUSTIC SODA, LIQUID 25% \* LIQ 001 GL BLK LB  
TYP REF-# OPID REASON AVG-COST QTY-ADJUST AMT-ADJUST GL #  
OHD CUI 10/31/84 INVENTORY 2.63 -1,712 \$45.03- 59417  
NET AMOUNT ADJUSTED: \$45.03-

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-012 CAUSTIC SODA, LIQUID 30% \* LIQ 001 GL BLK LB  
TYP REF-# OPID REASON AVG-COST QTY-ADJUST AMT-ADJUST GL #  
OHD CUI 10/31/84 INVENTORY 2.81 -6 \$0.17- 59417  
NET AMOUNT ADJUSTED: \$0.17-

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-014 CAUSTIC SODA, LIQUID 50% MCKS LIQ 005 GL CBY EA  
TYP REF-# OPID REASON AVG-COST QTY-ADJUST AMT-ADJUST GL #  
OHD CUI 10/31/84 INVENTORY 6.90 -9 \$62.10- 59417  
NET AMOUNT ADJUSTED: \$62.10-

MCK0062077

PGM: CK02L21P VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 84  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|                      |                      |           |                    |          |            |            |       |
|----------------------|----------------------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01377-015            | CAUSTIC SODA, LIQUID | 50%       | CUST               | LIQ      | 055 GL DRN | EA         |       |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHD                  |                      | CUI       | 10/31/84 INVENTORY | 43.73    | -1         | \$43.73-   | 59417 |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$43.73-   |       |

|                      |                  |            |                    |          |            |             |       |
|----------------------|------------------|------------|--------------------|----------|------------|-------------|-------|
| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD               | FORM     | -PACKAGE-- | UM          |       |
| 01391-004            | CHELATING AGENTS | VERSNE 100 | MCKS               | LIQ      | 055 GL RDM | EA          |       |
| TYP                  | REF-#            | OPID       | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |
| OHD                  |                  | CUI        | 10/31/84 INVENTORY | 202.81   | -6         | \$1,216.86- | 59417 |
| NET AMOUNT ADJUSTED: |                  |            |                    |          |            | \$1,216.86- |       |

|                      |                  |            |           |          |            |              |          |
|----------------------|------------------|------------|-----------|----------|------------|--------------|----------|
| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD      | FORM     | -PACKAGE-- | UM           |          |
| 01391-005            | CHELATING AGENTS | VERSNE 100 | *         | LIQ      | 001 GL BLK | LB           |          |
| TYP                  | REF-#            | OPID       | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
| RPK                  | 544-P08471       | C09        | 13/ACT II | 31.10    | -8,035     | \$2,498.89-  | 13116501 |
|                      | 544-P08518       | C09        | 54 ACT II | 31.10    | -32,635    | \$10,149.49- |          |
| NET AMOUNT ADJUSTED: |                  |            |           |          |            | \$12,648.38- |          |

|                      |            |           |                   |          |            |            |       |
|----------------------|------------|-----------|-------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |
| 01435-004            | ABSORBENTS | FLOOR-DRY | *                 | GRAN     | 033 LB BAG | EA         |       |
| TYP                  | REF-#      | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| INT                  |            | CUI       | WHSE USE-CLEAN UP | 2.41     | -44        | \$106.04-  | 73550 |
| NET AMOUNT ADJUSTED: |            |           |                   |          |            | \$106.04-  |       |

|                      |            |           |                    |          |            |            |       |
|----------------------|------------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01438-001            | N-PROPANOL |           | *                  | LIQ      | 001 GL BLK | LB         |       |
| TYP                  | REF-#      | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHD                  |            | CUI       | 10/31/84 INVENTORY | 38.63    | -100       | \$38.63-   | 59417 |
| NET AMOUNT ADJUSTED: |            |           |                    |          |            | \$38.63-   |       |

|                      |            |      |        |          |            |             |          |
|----------------------|------------|------|--------|----------|------------|-------------|----------|
| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P08408 | CUI  | 26 DRS | 38.63    | -9,620     | \$3,716.21- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$3,716.21- |          |

|                      |            |           |                   |          |            |            |       |
|----------------------|------------|-----------|-------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |
| 01438-003            | N-PROPANOL |           | MCKS              | LIQ      | 055 GL DRN | EA         |       |
| TYP                  | REF-#      | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHD                  |            | CUI       | 10 31 84 PHYS INV | 156.07   | -1         | \$156.07-  | 59417 |
| NET AMOUNT ADJUSTED: |            |           |                   |          |            | \$156.07-  |       |

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PGM: CK02L21P VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 85  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM         |          |  |  |
|----------------------|------------------|-----------|--------------|----------|------------|------------|----------|--|--|
| 01532-003            | ISOBUTYL ACETATE | 99%       | MCKS         | LIQ      | 055 GL     | DRM EA     |          |  |  |
| TYP                  | REF-#            | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P08335       | CUH       | SANBAR 10DRS | 191.81   | -1         | \$191.81-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |              |          |            | \$191.81-  |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|-----------------|-----------|--------|----------|------------|--------------|----------|--|--|
| 01546-002            | TETRAHYDROFURAN |           | *      | LIQ      | 001 GL     | BLK LB       |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P08532      | C09       | 62/17E | 101.90   | -23,920    | \$24,374.48- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$24,374.48- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01546-003            | TETRAHYDROFURAN |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                 | CUI       | 10/31/84 INVENTORY | 428.94   | -2         | \$857.88-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$857.88-  |       |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|------------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01548-002            | ETHANOL (FILMCO) | A-2 190   | *                  | LIQ      | 001 GL     | BLK LB      |       |  |  |
| TYP                  | REF-#            | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD                  |                  | CUI       | 10/31/84 INVENTORY | 22.44    | -8,110     | \$1,819.88- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |                    |          |            | \$1,819.88- |       |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01562-004            | ETHANOL (NEOSOL) | 190       | MCKS              | LIQ      | 054 GL     | NDM EA     |       |  |  |
| TYP                  | REF-#            | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                  | CUI       | 10 31 84 PHYS INV | 116.90   | -1         | \$116.90-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |                   |          |            | \$116.90-  |       |  |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01571-001            | CAUSTIC POTASH LIQUID | 50%       | *                 | LIQ      | 001 GL     | BLK LB     |       |  |  |
| TYP                  | REF-#                 | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                       | CUI       | 10 31 84 PHYS INV | 16.62    | +13,682    | \$2,273.95 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                   |          |            | \$2,273.95 |       |  |  |

| TYP | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
|-----|------------|------|---------------|----------|------------|-------------|----------|--|--|
| RPK | 544-P08332 | CUH  | 4000 GL 45%   | 16.62    | -41,246    | \$6,855.09- | 13116501 |  |  |
|     | 544-P08452 | C09  | 60/17E        | 16.62    | -35,640    | \$5,923.37- |          |  |  |
|     | 544-P08482 | C09  | CORR F/P08452 | 16.62    | -1         | \$0.17-     |          |  |  |
|     | 544-P08566 | C09  | 51 POLY DRS   | 16.62    | -33,660    | \$5,594.29- |          |  |  |

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$18,372.92-

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-----------------------|-----------|-------------------|----------|------------|-------------|-------|--|--|
| 01571-002 | CAUSTIC POTASH LIQUID | 50%       | MCKS              | LIQ      | 055 GL DRM | EA          |       |  |  |
| TYP       | REF-#                 | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD       |                       | CUI       | IPO RECV'D WRONG  | 125.00   | -51        | \$6,375.00- | 59417 |  |  |
|           |                       | CUI       | 10 31 84 PHYS INV | 125.00   | +16        | \$2,000.00  |       |  |  |

NET AMOUNT ADJUSTED: \$4,375.00-

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|-----------|-----------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01571-003 | CAUSTIC POTASH LIQUID | 45%       | MCKS               | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP       | REF-#                 | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD       |                       | CUI       | 10/31/84 INVENTORY | 120.59   | -3         | \$361.77-  | 59417 |  |  |

NET AMOUNT ADJUSTED: \$361.77-

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-----------------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01571-005 | CAUSTIC POTASH LIQUID | 45%       | *                  | LIQ      | 001 GL BLK | LB          |       |  |  |
| TYP       | REF-#                 | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD       |                       | CUI       | 10/31/84 INVENTORY | 15.58    | -35,900    | \$5,593.22- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$5,593.22-

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-----------------------|-----------|-------------------|----------|------------|-------------|-------|--|--|
| 01571-008 | CAUSTIC POTASH LIQUID | 45%       | MCKS              | LIQ      | 055 GL RDM | EA          |       |  |  |
| TYP       | REF-#                 | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD       |                       | CUI       | 10 31 84 PHYS INV | 118.35   | +3         | \$355.05    | 59417 |  |  |
|           |                       | CUI       | CORCT RCT OF IPO  | 118.35   | +51        | \$6,035.85  |       |  |  |
|           |                       | CUI       | CRCT PREV CRCTN   | 118.35   | -51        | \$6,035.85- |       |  |  |

NET AMOUNT ADJUSTED: \$355.05

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-----------------------|-----------|--------------------|----------|------------|-------------|-------|--|--|
| 01571-009 | CAUSTIC POTASH LIQUID | 50%       | MCKS               | LIQ      | 055 GL RDM | EA          |       |  |  |
| TYP       | REF-#                 | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD       |                       | CUI       | CRCT RCT OF IPO    | 122.13   | +51        | \$6,228.63  | 59417 |  |  |
|           |                       | CUI       | 10/31/84 INVENTORY | 122.13   | -19        | \$2,320.47- |       |  |  |

NET AMOUNT ADJUSTED: \$3,908.16

MCK0062080

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|-------------------|----------|------------|------------|-------|--|--|
| 01662-002            | HEXANE LR |           | MCKS              | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | 10 31 84 PHYS INV | 83.20    | -1         | \$83.20-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$83.20-   |       |  |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |       |  |  |
|----------------------|--------------------------|-----------|----------------|----------|------------|--------------|-------|--|--|
| 01667-002            | CAUSTIC SODA(GLUCONATED) | 50%       | *              | LIQ      | 001 GL BLK | LB           |       |  |  |
| TYP                  | REF-#                    | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |  |
| RCS                  | 544-P08413               | CUI       | CRCT SKU/FERDI | 8.75     | -99,999    | \$8,749.91-  | 12492 |  |  |
|                      | 544-P08413               | CUI       | CRCT SKU/FERDI | 8.75     | -5,696     | \$498.40-    |       |  |  |
|                      | 544-P08413               | CUI       | CRCT SKU/FERDI | 8.75     | -99,999    | \$8,749.91-  |       |  |  |
|                      | 544-P08413               | CUI       | CRCT SKU/FERDI | 8.75     | -99,999    | \$8,749.91-  |       |  |  |
| NET AMOUNT ADJUSTED: |                          |           |                |          |            | \$26,748.13- |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01669-009            | SODIUM CHLORIDE | 1/2 GRND  | *                  | CRYS     | 050 LB BAG | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| INT                  |                 | CUI       | WATER SOFTNER/PIKE | 1.79     | -50        | \$89.50-   | 73550 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                    |          |            | \$89.50-   |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |          |  |  |
|----------------------|------------|-----------|--------------------|----------|------------|------------|----------|--|--|
| 01675-002            | HEPTANES   |           | MCKS               | LIQ      | 055 GL DRM | EA         |          |  |  |
| TYP                  | REF-#      | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| OHD                  |            | CUI       | 10/31/84 INVENTORY | 82.43    | +1         | \$82.43    | 59417    |  |  |
| NET AMOUNT ADJUSTED: |            |           |                    |          |            | \$82.43    |          |  |  |
| TYP                  | REF-#      | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P08335 | CUH       | SANBAR 10DRS       | 82.43    | -1         | \$82.43-   | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |            |           |                    |          |            | \$82.43-   |          |  |  |

| PROD-CD              | PROD-NAME               | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01677-002            | MINERAL SPIRITS,REGULAR |           | MCKS               | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#                   | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                         | CUI       | 10/31/84 INVENTORY | 77.56    | -8         | \$620.48-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                         |           |                    |          |            | \$620.48-  |       |  |  |

MCK0062081

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|                      |           |           |                |          |            |            |       |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |
| 01689-001            | UREABOR   |           | *              | GRAN     | 050 LB BAG | EA         |       |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| INT                  |           | CUI       | WHSE USE-NEEDS | 36.17    | -10        | \$361.70-  | 73550 |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$361.70-  |       |

|                      |                        |           |                  |          |            |            |          |
|----------------------|------------------------|-----------|------------------|----------|------------|------------|----------|
| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM         |          |
| 01695-002            | MINERAL SPIRITS, SHORT |           | MCKS             | LIQ      | 055 GL DRN | EA         |          |
| TYP                  | REF-#                  | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P08341             | CUH       | FLOKEM #2 800 GL | 74.43    | -9         | \$669.87-  | 13116501 |
| NET AMOUNT ADJUSTED: |                        |           |                  |          |            | \$669.87-  |          |

|                      |                           |           |                    |          |            |            |       |
|----------------------|---------------------------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME                 | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01696-002            | MINERAL SPIRITS, ODORLESS |           | MCKS               | LIQ      | 055 GL DRN | EA         |       |
| TYP                  | REF-#                     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHQ                  |                           | CUI       | 10/31/84 INVENTORY | 109.69   | +2         | \$219.38   | 59417 |
| NET AMOUNT ADJUSTED: |                           |           |                    |          |            | \$219.38   |       |

|                      |           |           |                    |          |            |            |       |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01698-002            | KEROSENE  |           | MCKS               | LIQ      | 055 GL DRN | EA         |       |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHQ                  |           | CUI       | 10/31/84 INVENTORY | 76.82    | +2         | \$153.64   | 59417 |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$153.64   |       |

|                      |           |           |                    |          |            |            |       |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01699-001            | KEROSENE  | 450       | *                  | LIQ      | 001 GL BLK | LB         |       |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHQ                  |           | CUI       | 10/31/84 INVENTORY | 16.44    | +16        | \$2.63     | 59417 |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$2.63     |       |

|                      |            |      |        |          |            |            |          |
|----------------------|------------|------|--------|----------|------------|------------|----------|
| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P08573 | C09  | 6/17E  | 16.44    | -2,277     | \$374.34-  | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$374.34-  |          |

|                      |              |           |                    |          |            |            |       |
|----------------------|--------------|-----------|--------------------|----------|------------|------------|-------|
| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |
| 01802-001            | MCKSOLV PX-2 |           | *                  | LIQ      | 001 GL BLK | LB         |       |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHQ                  |              | CUI       | 10/31/84 INVENTORY | 21.79    | -624       | \$135.97-  | 59417 |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$135.97-  |       |

MCK0062082

PGM: CK02L21P VER 01.4  
DATE: 11/01/84 TIME: 02:04:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

REPORT NO: CK02R25A PAGE: 89  
JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|--------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01805-001            | MCKSOLV PX-3 |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |              | CUI       | 10/31/84 INVENTORY | 118.79   | -1         | \$118.79-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$118.79-  |       |  |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------------------|-----------|-------------------|----------|------------|-------------|-------|--|--|
| 01806-001            | MCKSOLV VM & P NAPTHA |           | *                 | LIQ      | 001 GL     | BLK LB      |       |  |  |
| TYP                  | REF-#                 | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OH0                  |                       | CUI       | 10 31 84 PHYS INV | 19.35    | -24,826    | \$4,803.83- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                   |          |            | \$4,803.83- |       |  |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
|----------------------|------------|------|--------|----------|------------|-------------|----------|--|--|
| RPK                  | 544-P08557 | CD9  | BLEND  | 19.35    | -6,899     | \$1,334.96- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$1,334.96- |          |  |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01806-002            | MCKSOLV VM & P NAPTHA |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#                 | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                       | CUI       | 10/31/84 INVENTORY | 85.68    | -2         | \$171.36-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                    |          |            | \$171.36-  |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 01896-007            | ALFONIC   |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |           | CUI       | 10/31/84 INVENTORY | 216.35   | -1         | \$216.35-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                    |          |            | \$216.35-  |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 02296-001            | MCKSOLV 1000 WASH |           | MCKS               | LIQ      | 055 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10/31/84 INVENTORY | 166.23   | -3         | \$498.69-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |            | \$498.69-  |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------------|-----------|--------------------|----------|------------|------------|-------|--|--|
| 02296-002            | MCKSOLV 1000 WASH |           | MCKS               | LIQ      | 001 GL     | BLK LB     |       |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OH0                  |                   | CUI       | 10/31/84 INVENTORY | 26.13    | -1,530     | \$399.79-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |            | \$399.79-  |       |  |  |

MCK0062083

DATE: 11/01/84 TIME: 02:04:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |  |
|-----------|-------------|-----------|-------------------|----------|---------------|------------|-------|--|--|
| 02398-001 | LIME SLURRY | 40-42%    | *                 | LIQ      | 001 GL BLK LB |            |       |  |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD       |             | CUI       | 10 31 84 PHYS INV | 1.72     | +6,176        | \$106.23   | 59417 |  |  |

NET AMOUNT ADJUSTED: \$106.23

| TYP | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
|-----|------------|------|---------------|----------|------------|------------|----------|
| RPK | 544-P08318 | CUH  | 3800 GL       | 1.72     | -4,905     | \$84.37-   | 13116501 |
|     | 544-P08405 | CUI  | 3800 GL       | 1.72     | -4,142     | \$71.24-   |          |
|     | 544-P08460 | C09  | BLEND 3000 GL | 1.72     | -3,270     | \$56.24-   |          |
|     | 544-P08552 | C09  | 3800G T/T     | 1.72     | -4,905     | \$84.37-   |          |
|     | 544-P08647 | C09  | BLEND         | 1.72     | -4,900     | \$84.28-   |          |
|     | 544-P08673 | C09  | BLEND         | 1.72     | -3,270     | \$56.24-   |          |

NET AMOUNT ADJUSTED: \$436.74-

| PROD-CD   | PROD-NAME                | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM         |       |  |  |
|-----------|--------------------------|-----------|---------------------|----------|---------------|------------|-------|--|--|
| 02422-001 | CAUSTIC SODA/LIME SLURRY |           | *                   | LIQ      | 001 GL BLK LB |            |       |  |  |
| TYP       | REF-#                    | OPID      | REASON              | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| RCS       | 544-P08405               | CUI       | INCRCT IPO-SEE NOTE | 3.80     | -12,928       | \$491.26-  | 12492 |  |  |

NET AMOUNT ADJUSTED: \$491.26-

| PROD-CD   | PROD-NAME        | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |       |  |  |
|-----------|------------------|-----------|--------------------|----------|---------------|-------------|-------|--|--|
| 02598-001 | MBL XYZ-22 BLEND |           | MCKS               | LIQ      | 001 GL BLK LB |             |       |  |  |
| TYP       | REF-#            | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |  |
| OHD       |                  | CUI       | 10/31/84 INVENTORY | 28.81    | -4,160        | \$1,198.50- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$1,198.50-

| PROD-CD   | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|-----------|--------------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 02704-001 | DINETHYL FORMAMIDE |           | *      | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP       | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P08595         | C09       | 10/17E | 38.20    | -4,040        | \$1,543.28- | 13116501 |  |  |

NET AMOUNT ADJUSTED: \$1,543.28-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |  |
|-----------|-----------|-----------|--------------------|----------|---------------|------------|-------|--|--|
| 02708-001 | KEROSENE  | 450       | MCKS               | LIQ      | 055 GL DRN EA |            |       |  |  |
| TYP       | REF-#     | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD       |           | CUI       | 10/31/84 INVENTORY | 76.63    | -4            | \$306.52-  | 59417 |  |  |

NET AMOUNT ADJUSTED: \$306.52-

MCK0062084

DATE: 11/01/84 TIME: 02:04:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 10/84

JOB: CN10J6 STEP: CN10G10

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |  |  |
|----------------------|--------------|-----------|-------------------|----------|---------------|------------|-------|--|--|--|
| 02716-001            | 140F SOLVENT |           | *                 | LIQ      | 001 GL BLK LB |            |       |  |  |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |  |
| OHD                  |              | CUI       | 10 31 84 PHYS INV | 17.92    | +297          | \$53.22    | 59417 |  |  |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |               | \$53.22    |       |  |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|------------------|-----------|-------------|----------|---------------|-------------|----------|--|--|--|
| 02721-001            | GLYCOL ETHER DPM |           | MSS         | LIQ      | 001 GL BLK LB |             |          |  |  |  |
| TYP                  | REF-#            | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P08454       | CUI       | 6 X 435     | 35.41    | -2,720        | \$963.15-   | 13116501 |  |  |  |
|                      | 544-P08457       | CUI       | CRCT P08422 | 35.41    | -13,160       | \$4,659.96- |          |  |  |  |
| NET AMOUNT ADJUSTED: |                  |           |             |          |               | \$5,623.11- |          |  |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER  | GRAD      | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|-------------------|------------|-----------|----------|---------------|-------------|----------|--|--|--|
| 02755-015            | HYDROGEN PEROXIDE | 35% SUPR D | MSS       | LIQ      | 001 GL BLK LB |             |          |  |  |  |
| TYP                  | REF-#             | OPID       | REASON    | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P08440        | CUI        | 16 DR     | 31.19    | -8,000        | \$2,495.20- | 13116501 |  |  |  |
|                      | 544-P08534        | C09        | 32/ACT II | 31.19    | -16,000       | \$4,990.40- |          |  |  |  |
| NET AMOUNT ADJUSTED: |                   |            |           |          |               | \$7,485.60- |          |  |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM           |          |  |  |  |
|----------------------|-------------------|-----------|-------------------|----------|---------------|--------------|----------|--|--|--|
| 02755-017            | HYDROGEN PEROXIDE | 50% TECH  | MSS               | LIQ      | 001 LB BLK LB |              |          |  |  |  |
| TYP                  | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |  |
| OHD                  |                   | CUI       | MTL GAIN          | 32.35    | +1,476        | \$477.49     | 59417    |  |  |  |
|                      |                   | CUI       | 10 31 84 PHYS INV | 32.35    | +401          | \$129.72     |          |  |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |               | \$607.21     |          |  |  |  |
| TYP                  | REF-#             | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |  |
| RPK                  | 544-P08338        | CUH       | 68 ACT II         | 32.35    | -34,000       | \$10,999.00- | 13116501 |  |  |  |
|                      | 544-P08466        | C09       | 70 ACT II         | 32.35    | -35,000       | \$11,322.50- |          |  |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |               | \$22,321.50- |          |  |  |  |

| PROD-CD              | PROD-NAME                 | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|---------------------------|-----------|--------|----------|---------------|-------------|----------|--|--|--|
| 02757-001            | MINERAL SPIRITS, ODORLESS |           | *      | LIQ      | 001 GL BLK LB |             |          |  |  |  |
| TYP                  | REF-#                     | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P08442                | C09       | 45 DRS | 26.93    | -15,880       | \$4,276.48- | 13116501 |  |  |  |
| NET AMOUNT ADJUSTED: |                           |           |        |          |               | \$4,276.48- |          |  |  |  |

MCK00062085

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|------------------------|-----------|--------------------|----------|---------------|-------------|----------|--|--|
| 02758-001            | MINERAL SPIRITS, SHORT |           | *                  | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#                  | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| OHQ                  |                        | CUI       | 10/31/84 INVENTORY | 17.82    | -6,734        | \$1,200.00- | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                        |           |                    |          |               | \$1,200.00- |          |  |  |
| TYP                  | REF-#                  | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08373             | CUH       | 15006 1000 WASH    | 17.82    | -7,643        | \$1,361.98- | 13116501 |  |  |
|                      | 544-P08391             | CUI       | 23 DRS             | 17.82    | -8,446        | \$1,505.08- |          |  |  |
| NET AMOUNT ADJUSTED: |                        |           |                    |          |               | \$2,867.06- |          |  |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|--------------------------|-----------|-------------------|----------|---------------|-------------|----------|--|--|
| 02760-001            | MINERAL SPIRITS, REGULAR |           | *                 | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#                    | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| OHQ                  |                          | CUI       | 10 31 84 PHYS INV | 17.09    | -15,741       | \$2,690.14- | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                          |           |                   |          |               | \$2,690.14- |          |  |  |
| TYP                  | REF-#                    | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08444               | CUI       | 36 DRS            | 17.09    | -12,852       | \$2,196.41- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                          |           |                   |          |               | \$2,196.41- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 02761-001            | GLYCOL ETHER DE |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08476      | C09       | 9 DRS  | 49.50    | -4,040        | \$1,999.80- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$1,999.80- |          |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-------------------|-----------|--------------------|----------|---------------|-------------|----------|--|--|
| 02806-007            | TRICHLOROETHYLENE |           | MSS                | LIQ      | 001 LB BLK LB |             |          |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| OHQ                  |                   | CUI       | 10/31/84 INVENTORY | 36.13    | -399          | \$144.16-   | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |               | \$144.16-   |          |  |  |
| TYP                  | REF-#             | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P08419        | CUI       | 9 X 660            | 36.13    | -6,180        | \$2,232.83- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                    |          |               | \$2,232.83- |          |  |  |

MCK0062086

DATE: 01/01/85 TIME: 21:13:07 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 12/84

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|------------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 01002-001            | PROPYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09308       | C09       | 50X480 | 40.00    | -24,000       | \$9,600.00- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |               | \$9,600.00- |          |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD    | FORM     | -PACKAGE--    | UM           |          |  |  |
|----------------------|------------------|-----------|---------|----------|---------------|--------------|----------|--|--|
| 01002-005            | PROPYLENE GLYCOL |           | USP     | LIQ      | 001 GL BLK LB |              |          |  |  |
| TYP                  | REF-#            | OPID      | REASON  | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P09150       | C09       | 1       | 37.14    | -1,270        | \$471.68-    | 13116501 |  |  |
|                      | 544-P09378       | C09       | 372X480 | 37.14    | -89,280       | \$33,158.59- |          |  |  |
|                      | 544-P09378       | C09       | 372X480 | 37.14    | -89,280       | \$33,158.59- |          |  |  |
| NET AMOUNT ADJUSTED: |                  |           |         |          |               | \$66,788.86- |          |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM         |          |  |  |
|----------------------|------------------|-----------|--------|----------|---------------|------------|----------|--|--|
| 01002-008            | PROPYLENE GLYCOL | MCKS      | USP    | LIQ      | 480 LB DRN EA |            |          |  |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P09260       | C09       | 1X480  | 213.64   | -1            | \$213.64-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |               | \$213.64-  |          |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD      | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-----------|-----------|-----------|----------|---------------|------------|-------|--|--|
| 01011-002            | CHLORINE  |           | *         | GAS      | 001 LB BLK LB |            |       |  |  |
| TYP                  | REF-#     | OPID      | REASON    | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | MTL GAIN  | 7.48     | +380          | \$28.42    | 59417 |  |  |
|                      |           | CUI       | MTL. GAIN | 7.48     | +6,361        | \$475.80   |       |  |  |
| NET AMOUNT ADJUSTED: |           |           |           |          |               | \$504.22   |       |  |  |

| TYP | REF-#      | OPID | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|------------------------|----------|------------|-------------|----------|
| RPK | 544-P09124 | C09  | 4000G BLEACH           | 7.48     | -5,474     | \$409.46-   | 13116501 |
|     | 544-P09142 | C09  | 28XTN                  | 7.48     | -56,000    | \$4,188.80- |          |
|     | 544-P09169 | C09  | 33 X TN                | 7.48     | -66,000    | \$4,936.80- |          |
|     | 544-P09203 | C09  | 17XTN/45X150           | 7.48     | -40,750    | \$3,048.10- |          |
|     | 544-P09215 | C09  | 40620#                 | 7.48     | -5,321     | \$398.01-   |          |
|     | 544-P09230 | C09  | 27 X TN                | 7.48     | -54,000    | \$4,039.20- |          |
|     | 544-P09232 | C09  | 7XTN                   | 7.48     | -14,000    | \$1,047.20- |          |
|     | 544-P09261 | C09  | 7XTN                   | 7.48     | -14,000    | \$1,047.20- |          |
|     | 544-P09285 | C09  | 10X2000                | 7.48     | -20,000    | \$1,496.00- |          |
|     | 544-P09315 | C09  | 21XTN;14X150 GOVT      | 7.48     | -44,100    | \$3,298.68- |          |
|     | 544-P09357 | C09  | 33XTN                  | 7.48     | -66,000    | \$4,936.80- |          |
|     | 544-P09369 | C09  | 37X100 FILLED 11/16/84 | 7.48     | -3,700     | \$276.76-   |          |
|     | 544-P09370 | C09  | 11/GOVT;6/150;3/TN     | 7.48     | -8,550     | \$639.54-   |          |
|     | 544-P09387 | C09  | 24XTN                  | 7.48     | -48,000    | \$3,590.40- |          |
|     | 544-P09412 | C09  | 42X150;28XTN           | 7.48     | -62,300    | \$4,660.04- |          |
|     | 544-P09420 | CUI  | 2X150 MCK;16X150 GVT   | 7.48     | -2,700     | \$201.96-   |          |
|     | 544-P09421 | C09  | 24X150;28XTN           | 7.48     | -59,600    | \$4,458.08- |          |

MCK0062102

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                |      |         |             |
|------------|-----|----------------|------|---------|-------------|
| 544-P09424 | CO9 | 4076G          | 7.48 | -5,340  | \$399.43-   |
| 544-P09444 | CO9 | 16XTN          | 7.48 | -32,000 | \$2,393.60- |
| 544-P09449 | CUI | 9/TONS 37/150S | 7.48 | -23,550 | \$1,761.54- |
| 544-P09478 | CUI | #282 & 281     | 7.48 | -60,000 | \$4,488.00- |
| 544-P09498 | CO9 | 23XTN;89X150   | 7.48 | -59,350 | \$4,439.38- |

NET AMOUNT ADJUSTED: \$56,154.98-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD        | FORM     | -PACKAGE-- | UM |             |  |          |
|-----------|-------------|-----------|-------------|----------|------------|----|-------------|--|----------|
| 01013-001 | ACETIC ACID | GLACIAL   | *           | LIQ      | 001 GL BLK | LB |             |  |          |
| TYP       | REF-#       | OPID      | REASON      | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK       | 544-P09302  | CO9       | 20X450      | 23.54    | -9,000     |    | \$2,118.60- |  | 13116501 |
|           | 544-P09303  | CO9       | 101X450     | 23.54    | -36,360    |    | \$8,559.14- |  |          |
|           | 544-P09384  | CO9       | 1XLIQUA BIN | 23.54    | -2,392     |    | \$563.08-   |  |          |

NET AMOUNT ADJUSTED: \$11,240.82-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |             |  |          |
|-----------|------------|-----------|--------|----------|------------|----|-------------|--|----------|
| 01018-001 | ACETONE    |           | *      | LIQ      | 001 GL BLK | LB |             |  |          |
| TYP       | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK       | 544-P09411 | CO9       | 50X357 | 20.81    | -18,207    |    | \$3,788.88- |  | 13116501 |

NET AMOUNT ADJUSTED: \$3,788.88-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD        | FORM     | -PACKAGE-- | UM |            |  |       |
|-----------|--------------|-----------|-------------|----------|------------|----|------------|--|-------|
| 01044-004 | AQUA AMMONIA | 26 BE     | *           | LIQ      | 055 GL RDM | EA |            |  |       |
| TYP       | REF-#        | OPID      | REASON      | AVG-COST | QTY-ADJUST |    | AMT-ADJUST |  | GL #  |
| INT       |              | CUI       | USE AT PIKE | 29.84    | -4         |    | \$119.36-  |  | 73550 |

NET AMOUNT ADJUSTED: \$119.36-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |             |  |          |
|-----------|-----------------|-----------|--------|----------|------------|----|-------------|--|----------|
| 01060-001 | GLYCOL ETHER EE |           | MSS    | LIQ      | 001 LB BLK | LB |             |  |          |
| TYP       | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK       | 544-P09301      | CO9       | 10X425 | 48.60    | -4,285     |    | \$2,082.51- |  | 13116501 |

NET AMOUNT ADJUSTED: \$2,082.51-

| PROD-CD   | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |              |  |          |
|-----------|------------------|-----------|--------|----------|------------|----|--------------|--|----------|
| 01074-001 | GLYCOL ETHER PPH |           | MSS    | LIQ      | 001 GL BLK | LB |              |  |          |
| TYP       | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST   |  | GL #     |
| RPK       | 544-P09326       | CO9       | 78X450 | 58.50    | -35,420    |    | \$20,720.70- |  | 13116501 |

NET AMOUNT ADJUSTED: \$20,720.70-

MCK0062103

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01081-001            | GLYCOL ETHER EB |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09185      | C09       | 10X372 | 34.62    | -120          | \$41.54-    | 13116501 |  |
|                      | 544-P09492      | C09       | 40X415 | 34.62    | -16,932       | \$5,861.86- |          |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$5,903.40- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-----------------|-----------|--------|----------|---------------|--------------|----------|--|
| 01088-001            | GLYCOL ETHER DB |           | MSS    | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09113      | C09       | 89X440 | 51.07    | -39,640       | \$20,244.15- | 13116501 |  |
|                      | 544-P09279      | C09       | 55X440 | 51.07    | -24,220       | \$12,369.15- |          |  |
|                      | 544-P09305      | C09       | 62X440 | 51.07    | -27,566       | \$14,077.96- |          |  |
|                      | 544-P09316      | C09       | 18X440 | 51.07    | -8,080        | \$4,126.46-  |          |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$50,817.72- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD      | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|-----------|----------|---------------|--------------|----------|--|
| 01104-008            | GLYCERINE  | 96%       | USP       | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON    | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09038 | C09       | 1 X 570   | 84.02    | -1            | \$0.84-      | 13116501 |  |
|                      | 544-P09039 | C09       | 146 X 570 | 84.02    | -83,220       | \$69,921.44- |          |  |
| NET AMOUNT ADJUSTED: |            |           |           |          |               | \$69,922.28- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|---------------|----------|---------------|--------------|----------|--|
| 01104-011            | GLYCERINE  | 99.5%     | USP           | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09371 | CUI       | 20 X 570 TECH | 83.92    | -11,628       | \$9,758.22-  | 13116501 |  |
|                      | 544-P09377 | C09       | 166X570       | 83.92    | -93,572       | \$78,525.62- |          |  |
| NET AMOUNT ADJUSTED: |            |           |               |          |               | \$88,283.84- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|--------|----------|---------------|--------------|----------|--|
| 01110-001            | FREON      | TF        | MSS    | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09323 | C09       | 47X690 | 84.31    | -32,430       | \$27,341.73- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |               | \$27,341.73- |          |  |

| PROD-CD   | PROD-NAME          | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM           |          |  |
|-----------|--------------------|-----------|-------------|----------|---------------|--------------|----------|--|
| 01113-007 | BORAX PENTAHYDRATE | 5 MOL     | *           | GRAN     | 001 LB BLK LB |              |          |  |
| TYP       | REF-#              | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK       | 544-P09060         | C09       | 1989X100    | 11.65    | -99,900       | \$11,638.35- | 13116501 |  |
|           | 544-P09060         | C09       | 1989X100    | 11.65    | -99,900       | \$11,638.35- |          |  |
|           | 544-P09146         | CUI       | USBX 488906 | 11.65    | -99,999       | \$11,649.88- |          |  |

MCK0062104

PGM: CK02L21P VER 01.4  
DATE: 01/01/85 TIME: 21:13:07

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
12/84

REPORT NO: CK02R25A PAGE: 19  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                      |       |         |              |
|------------|-----|----------------------|-------|---------|--------------|
| 544-P09146 | CUI | 1974X100-USBX 488906 | 11.65 | -99,999 | \$11,649.88- |
| 544-P09146 | CUI | USBX 488906          | 11.65 | -152    | \$17.71-     |

NET AMOUNT ADJUSTED: \$46,594.17-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|------------|-----------|------------------------|----------|---------------|-------------|----------|--|
| 01120-012 | SODA ASH   | DENSE     | *                      | GRAN     | 001 LB BLK LB |             |          |  |
| TYP       | REF-#      | OPID      | REASON                 | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P09082 | C09       | 1978X100               | 5.60     | -97,225       | \$5,444.60- | 13116501 |  |
|           | 544-P09082 | C09       | 1978X100               | 5.60     | -97,225       | \$5,444.60- |          |  |
|           | 544-P09145 | C09       | 1533X100               | 5.60     | -77,650       | \$4,348.40- |          |  |
|           | 544-P09145 | C09       | 1533X100               | 5.60     | -77,650       | \$4,348.40- |          |  |
|           | 544-P09147 | C09       | 833X50(CORR ON P09348) | 5.60     | -832          | \$46.59-    |          |  |
|           | 544-P09170 | C09       | NL BLEND               | 5.60     | -464          | \$25.98-    |          |  |
|           | 544-P09174 | C09       | 2023X50                | 5.60     | -50,037       | \$2,802.07- |          |  |
|           | 544-P09174 | C09       | 2023X50                | 5.60     | -50,038       | \$2,802.13- |          |  |
|           | 544-P09175 | C09       | 1010X100               | 5.60     | -99,925       | \$5,595.80- |          |  |
|           | 544-P09348 | C09       | CORR OF P09145         | 5.60     | -1            | \$0.06-     |          |  |

NET AMOUNT ADJUSTED: \$30,858.63-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM          |       |  |
|-----------|------------|-----------|----------------------|----------|---------------|-------------|-------|--|
| 01120-015 | SODA ASH   | DENSE     | MCKS                 | GRAN     | 100 LB BAG EA |             |       |  |
| TYP       | REF-#      | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| RCS       | 544-P08028 | CUI       | SDM 3088             | 7.06     | -480          | \$3,388.80- | 12492 |  |
|           | 544-P08028 | CUI       | SDM 3089             | 7.06     | -480          | \$3,388.80- |       |  |
|           | 544-P08877 | CUI       | SDM 3092             | 7.06     | -400          | \$2,824.00- |       |  |
|           | 544-P09348 | CUI       | SDM 3095-STAUH WHSE  | 7.06     | -480          | \$3,388.80- |       |  |
|           | 544-P09348 | CUI       | SDM 3093-WRNR LAMBRT | 7.06     | -400          | \$2,824.00- |       |  |

NET AMOUNT ADJUSTED: \$15,814.40-

|     |            |      |             |          |            |            |          |
|-----|------------|------|-------------|----------|------------|------------|----------|
| TYP | REF-#      | OPID | REASON      | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK | 544-P09341 | C09  | 4200G BLEND | 7.06     | -6         | \$42.36-   | 13116501 |

NET AMOUNT ADJUSTED: \$42.36-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |       |  |
|-----------|------------|-----------|----------|----------|---------------|-------------|-------|--|
| 01120-016 | SODA ASH   | DENSE     | MCKS     | GRAN     | 050 LB BAG EA |             |       |  |
| TYP       | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| RCS       | 544-P08761 | C09       | SDM 3081 | 3.62     | -859          | \$3,109.58- | 12492 |  |

NET AMOUNT ADJUSTED: \$3,109.58-

MCK0062105

12/84

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM           |          |  |  |
|-----------|-------------------|-----------|---------------|----------|------------|--------------|----------|--|--|
| 01124-070 | HYDROGEN PEROXIDE | 70% TECH  | MSS           | LIQ      | 001 LB BLK | LB           |          |  |  |
| TYP       | REF-#             | OPID      | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK       | 544-P09151        | C09       | BLEND 72642   | 45.87    | -52,626    | \$24,139.55- | 13116501 |  |  |
|           | 544-P09242        | C09       | 67728         | 45.87    | -34,368    | \$15,764.60- |          |  |  |
|           | 544-P09311        | C09       | 73006         | 45.87    | -52,626    | \$24,139.55- |          |  |  |
|           | 544-P09331        | C09       | 1248#DILUTION | 45.87    | -874       | \$400.90-    |          |  |  |

NET AMOUNT ADJUSTED: \$64,444.60-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD         | FORM     | -PACKAGE-- | UM         |       |  |  |
|-----------|-------------------|-----------|--------------|----------|------------|------------|-------|--|--|
| 01124-086 | HYDROGEN PEROXIDE | 50%       | CUST         | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP       | REF-#             | OPID      | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD       |                   | CUI       | IPO RCD WRNG | 168.57   | +25        | \$4,214.25 | 59417 |  |  |

NET AMOUNT ADJUSTED: \$4,214.25

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-------------------|-----------|------------------|----------|------------|-------------|-------|--|--|
| 01124-087 | HYDROGEN PEROXIDE | 35%       | CUST             | LIQ      | 055 GL DRM | EA          |       |  |  |
| TYP       | REF-#             | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD       |                   | CUI       | S/B 50% CUST DR. | 121.25   | -25        | \$3,031.25- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$3,031.25-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|-------------------|-----------|----------------|----------|------------|-------------|----------|--|--|
| 01125-001 | HYDROCHLORIC ACID | 20 BE     | *              | LIQ      | 001 LB BLK | LB          |          |  |  |
| TYP       | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P09134        | C09       | 160 X 500      | 3.45     | -80,000    | \$2,760.00- | 13116501 |  |  |
|           | 544-P09192        | C09       | 42X140         | 3.45     | -5,880     | \$202.86-   |          |  |  |
|           | 544-P09300        | C09       | CORR OF P09192 | 3.45     | -1         | \$0.03-     |          |  |  |
|           | 544-P09469        | C09       | 143X500        | 3.45     | -71,500    | \$2,466.75- |          |  |  |

NET AMOUNT ADJUSTED: \$5,429.64-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|-------------------|-----------|----------------|----------|------------|-------------|----------|--|--|
| 01125-006 | HYDROCHLORIC ACID | 22 BE     | *              | LIQ      | 001 LB BLK | LB          |          |  |  |
| TYP       | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P09166        | C09       | BLEND          | 3.65     | -90,000    | \$3,285.00- | 13116501 |  |  |
|           | 544-P09166        | C09       | BLEND          | 3.65     | -90,000    | \$3,285.00- |          |  |  |
|           | 544-P09400        | C09       | 3500G          | 3.65     | -98,300    | \$3,587.95- |          |  |  |
|           | 544-P09434        | C09       | CORR OF P09400 | 3.65     | -1         | \$0.04-     |          |  |  |

NET AMOUNT ADJUSTED: \$10,157.99-

MCK0062106

PGM: CK02L21P VER 01.4  
DATE: 01/01/85 TIME: 21:13:07

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
12/84

REPORT NO: CK02R25A PAGE: 21  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-------------------|-----------|-------------------------|----------|------------|-------------|-------|--|
| 01125-011            | HYDROCHLORIC ACID | 20 BE     | MCKS                    | LIQ      | 055 GL RDM | EA          |       |  |
| TYP                  | REF-#             | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OH0                  |                   | CUI       | RCD WRG SKU 5/B01125012 | 26.78    | -82        | \$2,195.96- | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |           |                         |          |            | \$2,195.96- |       |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-------------------|-----------|------------------|----------|------------|------------|-------|--|
| 01125-012            | HYDROCHLORIC ACID | 20 BE     | MCKS             | LIQ      | 015 GL CBY | EA         |       |  |
| TYP                  | REF-#             | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                   | CUI       | FRM SKU 01125011 | 8.83     | +82        | \$724.06   | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |           |                  |          |            | \$724.06   |       |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|---------|----------|------------|-------------|----------|--|
| 01132-001            | METHANOL   |           | *       | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09185 | C09       | 10X372  | 8.47     | -365       | \$30.92-    | 13116501 |  |
|                      | 544-P09362 | C09       | 100X358 | 8.47     | -36,516    | \$3,092.91- |          |  |
| NET AMOUNT ADJUSTED: |            |           |         |          |            | \$3,123.83- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|--------|----------|------------|-------------|----------|--|
| 01143-002            | SODIUM GLUCONATE |           | *      | FINE     | 050 LB BAG | EA          |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09190       | C09       | 4000G  | 28.98    | -16        | \$463.68-   | 13116501 |  |
|                      | 544-P09394       | C09       | 4000G  | 28.98    | -16        | \$463.68-   |          |  |
|                      | 544-P09396       | C09       | 3240G  | 28.98    | -7         | \$202.86-   |          |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |            | \$1,130.22- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD       | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------------------|-----------|------------|----------|------------|--------------|----------|--|
| 01154-010            | SODIUM SULFATE ANHYDROUS | ANHYD     | *          | GRAN     | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#                    | OPID      | REASON     | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P08962               | C09       | 1890 X 100 | 6.01     | -95,030    | \$5,711.30-  | 13116501 |  |
|                      | 544-P08962               | C09       | 1890 X 100 | 6.01     | -95,030    | \$5,711.30-  |          |  |
|                      | 544-P09081               | C09       | 1926X100   | 6.01     | -99,650    | \$5,988.97-  |          |  |
|                      | 544-P09081               | C09       | 1926X100   | 6.01     | -99,650    | \$5,988.97-  |          |  |
|                      | 544-P09098               | C09       | 1453X100   | 6.01     | -72,553    | \$4,360.44-  |          |  |
|                      | 544-P09098               | C09       | 1453X100   | 6.01     | -72,552    | \$4,360.38-  |          |  |
|                      | 544-P09296               | C09       | 931X50     | 6.01     | -46,355    | \$2,785.94-  |          |  |
| NET AMOUNT ADJUSTED: |                          |           |            |          |            | \$34,907.30- |          |  |

MCK0062107

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|---------------------|-----------|--------------|----------|---------------|--------------|----------|--|
| 01162-001            | METHYL ETHYL KETONE |           | *            | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#               | OPID      | REASON       | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09185          | CO9       | 10X372       | 30.51    | -188          | \$57.36-     | 13116501 |  |
|                      | 544-P09322          | CO9       | 62X366       | 30.51    | -22,692       | \$6,923.33-  |          |  |
|                      | 544-P09372          | CO9       | 100X366      | 30.51    | -37,332       | \$11,389.99- |          |  |
|                      | 544-P09448          | CUI       | 25 X 366     | 30.51    | -9,333        | \$2,847.50-  |          |  |
|                      | 544-P09454          | CUI       | SANBAR BLEND | 30.51    | -1,980        | \$604.10-    |          |  |
|                      | 544-P09467          | CO9       | 15X366       | 30.51    | -5,600        | \$1,708.56-  |          |  |
| NET AMOUNT ADJUSTED: |                     |           |              |          |               | \$23,530.84- |          |  |

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|----------------|-----------|-------------|----------|---------------|-------------|----------|--|
| 01174-014            | SODIUM NITRITE | FREE FLOW | *           | GRAN     | 100 LB BAG EA |             |          |  |
| TYP                  | REF-#          | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09259     | CO9       | T/T BLEND   | 41.17    | -3            | \$123.51-   | 13116501 |  |
|                      | 544-P09341     | CO9       | 4200G BLEND | 41.17    | -5            | \$205.85-   |          |  |
|                      | 544-P09460     | CO9       | BLEND       | 41.17    | -180          | \$7,410.60- |          |  |
| NET AMOUNT ADJUSTED: |                |           |             |          |               | \$7,739.96- |          |  |

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|----------------|-----------|-------------|----------|---------------|-------------|----------|--|
| 01174-016            | SODIUM NITRITE | FREE FLOW | *           | GRAN     | 400 LB DRN EA |             |          |  |
| TYP                  | REF-#          | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09341     | CO9       | 4200G BLEND | 158.74   | -16           | \$2,539.84- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                |           |             |          |               | \$2,539.84- |          |  |

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|----------------|-----------|------------------------|----------|---------------|-------------|-------|--|
| 01174-026            | SODIUM NITRITE | SUPER FF  | FCC                    | CRYS     | 100 LB BAG EA |             |       |  |
| TYP                  | REF-#          | OPID      | REASON                 | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OHD                  |                | CUI       | NOT PRV DRWN DWN-P8971 | 39.73    | -186          | \$7,389.78- | 59417 |  |
|                      |                | CUI       | MTL GAIN               | 39.73    | +16           | \$635.68    |       |  |
| NET AMOUNT ADJUSTED: |                |           |                        |          |               | \$6,754.10- |       |  |

| TYP                  | REF-#      | OPID | REASON      | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|-------------|----------|------------|--------------|----------|
| RPK                  | 544-P09170 | CO9  | NL BLEND    | 39.73    | -186       | \$7,389.78-  | 13116501 |
|                      | 544-P09259 | CO9  | T/T BLEND   | 39.73    | -179       | \$7,111.67-  |          |
|                      | 544-P09341 | CO9  | 4200G BLEND | 39.73    | -113       | \$4,489.49-  |          |
|                      | 544-P09383 | CO9  | 4200G       | 39.73    | -179       | \$7,111.67-  |          |
| NET AMOUNT ADJUSTED: |            |      |             |          |            | \$26,102.61- |          |

MCK0062108

DATE: 01/01/85 TIME: 21:13:07 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 12/84

JOB: CN1036 STEP: CN10605

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 01189-001            | NITRIC ACID | 42 BE     | *      | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#       | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09181  | C09       | 78X600 | 8.84     | -46,800       | \$4,137.12- | 13116501 |  |  |
|                      | 544-P09182  | C09       | 29X170 | 8.84     | -4,930        | \$435.81-   |          |  |  |
|                      | 544-P09376  | C09       | 18X170 | 8.84     | -3,060        | \$270.50-   |          |  |  |
| NET AMOUNT ADJUSTED: |             |           |        |          |               | \$4,843.43- |          |  |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM         |          |  |  |
|----------------------|-------------|-----------|--------|----------|---------------|------------|----------|--|--|
| 01189-004            | NITRIC ACID | 38 BE     | *      | LIQ      | 001 LB BLK LB |            |          |  |  |
| TYP                  | REF-#       | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P09252  | C09       | 45X90  | 6.63     | -4,050        | \$268.52-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |             |           |        |          |               | \$268.52-  |          |  |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD       | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-------------|-----------|------------|----------|---------------|------------|-------|--|--|
| 01189-009            | NITRIC ACID | 42 BE     | MCKS       | LIQ      | 055 GL RDM EA |            |       |  |  |
| TYP                  | REF-#       | OPID      | REASON     | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD                  |             | CUI       | PHYS-SHP'D | 58.47    | +4            | \$233.88   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |             |           |            |          |               | \$233.88   |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD      | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-------------------|-----------|-----------|----------|---------------|-------------|----------|--|--|
| 01212-005            | PERCHLOROETHYLENE |           | *         | LIQ      | 001 LB BLK LB |             |          |  |  |
| TYP                  | REF-#             | OPID      | REASON    | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09139        | C09       | 45 X 700  | 27.41    | -32,130       | \$8,806.83- | 13116501 |  |  |
|                      | 544-P09283        | C09       | 800G      | 27.41    | -2            | \$0.55-     |          |  |  |
|                      | 544-P09453        | CUI       | FLOKEM #3 | 27.41    | -3,672        | \$1,006.50- |          |  |  |
| NET AMOUNT ADJUSTED: |                   |           |           |          |               | \$9,813.88- |          |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-------------------|-----------|----------|----------|---------------|-------------|----------|--|--|
| 01223-001            | DIETHYLENE GLYCOL |           | *        | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#             | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09171        | C09       | 50 X 520 | 20.82    | -26,520       | \$5,521.46- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |          |          |               | \$5,521.46- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 01224-001            | HEXYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09195      | C09       | 36X427 | 60.79    | -15,068       | \$9,159.84- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$9,159.84- |          |  |  |

MCK0062109

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM | AMT-ADJUST  | GL #     |
|----------------------|-----------------|-----------|--------|----------|---------------|----|-------------|----------|
| 01225-001            | ETHYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK LB |    |             |          |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    |    |             |          |
| RPK                  | 544-P09282      | C09       | 55X59  | 22.24    | -28,545       |    | \$6,348.41- | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               |    | \$6,348.41- |          |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD    | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #     |
|----------------------|--------------------|-----------|---------|----------|---------------|----|--------------|----------|
| 01229-003            | METHYLENE CHLORIDE |           | *       | LIQ      | 001 GL BLK LB |    |              |          |
| TYP                  | REF-#              | OPID      | REASON  | AVG-COST | QTY-ADJUST    |    |              |          |
| RPK                  | 544-P09224         | C09       | 128X600 | 27.75    | -78,336       |    | \$21,738.24- | 13116501 |
|                      | 544-P09283         | C09       | 800G    | 27.75    | -2,212        |    | \$613.83-    |          |
| NET AMOUNT ADJUSTED: |                    |           |         |          |               |    | \$22,352.07- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM | AMT-ADJUST  | GL #     |
|----------------------|------------|-----------|--------|----------|---------------|----|-------------|----------|
| 01233-001            | XYLENE     |           | *      | LIQ      | 001 GL BLK LB |    |             |          |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    |    |             |          |
| RPK                  | 544-P09179 | C09       | 60X390 | 20.75    | -23,868       |    | \$4,952.61- | 13116501 |
|                      | 544-P09398 | C09       | 4000G  | 20.75    | -1,160        |    | \$240.70-   |          |
| NET AMOUNT ADJUSTED: |            |           |        |          |               |    | \$5,193.31- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM | AMT-ADJUST   | GL #     |
|----------------------|------------|-----------|--------|----------|---------------|----|--------------|----------|
| 01236-002            | TOLUENE    |           | *      | LIQ      | 001 GL BLK LB |    |              |          |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    |    |              |          |
| RPK                  | 544-P09070 | C09       | 50X390 | 19.78    | -19,890       |    | \$3,934.24-  | 13116501 |
|                      | 544-P09178 | C09       | 39X390 | 19.78    | -15,514       |    | \$3,068.67-  |          |
|                      | 544-P09185 | C09       | 10X372 | 19.78    | -602          |    | \$119.08-    |          |
|                      | 544-P09257 | C09       | 70X390 | 19.78    | -27,846       |    | \$5,507.94-  |          |
| NET AMOUNT ADJUSTED: |            |           |        |          |               |    | \$12,629.93- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM | AMT-ADJUST | GL #     |
|----------------------|------------|-----------|--------|----------|---------------|----|------------|----------|
| 01236-004            | TOLUENE    |           | MCKS   | LIQ      | 054 GL DRM EA |    |            |          |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    |    |            |          |
| RPK                  | 544-P09398 | C09       | 4000G  | 96.75    | -6            |    | \$580.50-  | 13116501 |
| NET AMOUNT ADJUSTED: |            |           |        |          |               |    | \$580.50-  |          |

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM | AMT-ADJUST  | GL #     |
|-----------|-------------------|-----------|--------------|----------|---------------|----|-------------|----------|
| 01238-001 | ISOPROPYL ALCOHOL | 99%       | *            | LIQ      | 001 LB BLK LB |    |             |          |
| TYP       | REF-#             | OPID      | REASON       | AVG-COST | QTY-ADJUST    |    |             |          |
| RPK       | 544-P09185        | C09       | 10X372       | 24.81    | -362          |    | \$89.81-    | 13116501 |
|           | 544-P09307        | C09       | 20X355       | 24.81    | -7,242        |    | \$1,796.74- |          |
|           | 544-P09310        | C09       | 50X355       | 24.81    | -18,105       |    | \$4,491.85- |          |
|           | 544-P09454        | CUI       | SANBAR BLEND | 24.81    | -4,232        |    | \$1,049.96- |          |

MCK0062110

PGM: CK02L21P VER 01.4  
DATE: 01/01/85 TIME: 21:13:07

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
12/84

REPORT NO: CK02R25A PAGE: 25  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

544-P09468 CO9 100X355 24.81 -35,500 \$8,807.55-

NET AMOUNT ADJUSTED: \$16,235.91-

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01245-011            | TRIETHANOLAMINE | 85%       | *      | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09373      | CO9       | 44X510 | 36.86    | -22,780       | \$8,396.71- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$8,396.71- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|--------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01255-001            | TRIETHYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09280         | CO9       | 45X520 | 29.60    | -23,960       | \$7,092.16- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                    |           |        |          |               | \$7,092.16- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER  | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------------|------------|--------|----------|---------------|-------------|----------|--|
| 01260-003            | 1,1,1 TRICHLOROETHANE | AEROTHN TT | MSS    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                 | OPID       | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09158            | CO9        | 32X592 | 39.29    | -18,740       | \$7,362.95- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                       |            |        |          |               | \$7,362.95- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-----------------------|-----------|-------------|----------|---------------|--------------|----------|--|
| 01260-009            | 1,1,1 TRICHLOROETHANE | CHLORO SM | MSS         | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#                 | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09197            | CO9       | 30X592      | 38.08    | -18,115       | \$6,898.19-  | 13116501 |  |
|                      | 544-P09313            | CUI       |             | 38.08    | -1,413        | \$538.07-    |          |  |
|                      | 544-P09406            | CUG       |             | 38.08    | -20,000       | \$7,616.00-  |          |  |
|                      | 544-P09453            | CUI       | FLOKEM #3   | 38.08    | -1,755        | \$668.30-    |          |  |
|                      | 544-P09454            | CUI       | SANBARBLEND | 38.08    | -46,724       | \$17,792.50- |          |  |
|                      | 544-P09463            | CUG       |             | 38.08    | -13,000       | \$4,950.40-  |          |  |
|                      | 544-P09493            | CO9       | 100X592     | 38.08    | -59,200       | \$22,543.36- |          |  |
| NET AMOUNT ADJUSTED: |                       |           |             |          |               | \$61,006.82- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-----------------------|-----------|--------|----------|---------------|--------------|----------|--|
| 01260-022            | 1,1,1 TRICHLOROETHANE | VDG       | *      | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#                 | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09198            | CO9       | 50X592 | 38.00    | -30,192       | \$11,472.96- | 13116501 |  |
|                      | 544-P09208            | CO9       | 20X603 | 38.00    | -12,301       | \$4,674.38-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |        |          |               | \$16,147.34- |          |  |

MCK0062111

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |  |
|----------------------|-----------------|-----------|--------|----------|---------------|--------------|----------|--|--|
| 01265-001            | STYRENE MONOMER |           | *      | LIQ      | 001 GL BLK LB |              |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P09159      | C09       | 22X410 | 32.85    | -8,900        | \$2,923.65-  | 13116501 |  |  |
|                      | 544-P09375      | CUG       |        | 32.85    | -14,600       | \$4,796.10-  |          |  |  |
|                      | 544-P09392      | C09       | 36X410 | 32.85    | -15,080       | \$4,953.78-  |          |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$12,673.53- |          |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 01281-009            | NEODOL     |           | 25-3   | LIQ      | 001 LB BLK LB |             |          |  |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09361 | C09       | 17X410 | 52.32    | -7,370        | \$3,855.98- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |               | \$3,855.98- |          |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD      | FORM     | -PACKAGE--    | UM           |          |  |  |
|----------------------|--------------|-----------|-----------|----------|---------------|--------------|----------|--|--|
| 01282-020            | CAUSTIC SODA |           | *         | BEAD     | 001 LB BLK LB |              |          |  |  |
| TYP                  | REF-#        | OPID      | REASON    | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P09110   | C09       | 80X500    | 17.50    | -40,000       | \$7,000.00-  | 13116501 |  |  |
|                      | 544-P09129   | C09       | 77X500    | 17.50    | -38,500       | \$6,737.50-  |          |  |  |
|                      | 544-P09205   | C09       | 80X500    | 17.50    | -40,000       | \$7,000.00-  |          |  |  |
|                      | 544-P09207   | C09       | VMC#73149 | 17.50    | -9,000        | \$1,575.00-  |          |  |  |
|                      | 544-P09284   | CUI       | DUBOIS DR | 17.50    | -40,000       | \$7,000.00-  |          |  |  |
|                      | 544-P09320   | C09       | 160X500   | 17.50    | -80,000       | \$14,000.00- |          |  |  |
|                      | 544-P09344   | C09       | 4X500     | 17.50    | -2,000        | \$350.00-    |          |  |  |
| NET AMOUNT ADJUSTED: |              |           |           |          |               | \$43,662.50- |          |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|--------------|-----------|--------------------|----------|---------------|------------|-------|--|--|
| 01282-051            | CAUSTIC SODA | CONSIGNED | *                  | BEAD     | 001 LB BLK LB |            |       |  |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHG                  |              | CUI       | VMC 73148-MCK USE  | 0.01     | -40,000       | \$4.00-    | 59417 |  |  |
|                      |              | CUI       | VMC 73149-MCK USE  | 0.01     | -9,000        | \$0.90-    |       |  |  |
|                      |              | CUI       | NAHX 93320-MCK USE | 0.01     | -99,999       | \$10.00-   |       |  |  |
|                      |              | CUI       | VMC 73147          | 0.01     | -40,000       | \$4.00-    |       |  |  |
|                      |              | CUI       | VMC 73146-MCK USE  | 0.01     | -40,000       | \$4.00-    |       |  |  |
|                      |              | CUI       | NAHX 93320-MCK USE | 0.01     | -95,401       | \$9.54-    |       |  |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |               | \$32.44-   |       |  |  |

| TYP                  | REF-#      | OPID | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
|----------------------|------------|------|--------------------|----------|------------|------------|-------|
| RCS                  | 544-P08878 | C09  | VMC73144/ECON LABS | 0.01     | -43,040    | \$4.30-    | 12492 |
|                      | 544-P08878 | C09  | VMC#73151          | 0.01     | -47,600    | \$4.76-    |       |
|                      | 544-P08878 | C09  | VMC#73150          | 0.01     | -48,070    | \$4.81-    |       |
| NET AMOUNT ADJUSTED: |            |      |                    |          |            | \$13.87-   |       |

MCK0062112

PGM: CK02L21P VER 01.4  
DATE: 01/01/85 TIME: 21:13:07

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
12/84

REPORT NO: CK02R25A PAGE: 27  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| TYP                  | REF-#      | OPID | REASON  | AVG-COST | QTY-ADJST | AMT-ADJST | GL #     |
|----------------------|------------|------|---------|----------|-----------|-----------|----------|
| RPK                  | 544-P09085 | C09  | 15X3000 | 0.01     | -45,000   | \$4.50-   | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |         |          |           | \$4.50-   |          |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM        |       |
|----------------------|--------------|-----------|-------------------|----------|------------|-----------|-------|
| 01282-052            | CAUSTIC SODA | CONSIGNED | MCKS              | BEAD     | 500 LB     | DRM EA    |       |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |
| OHD                  |              | CUI       | VMC 73145-MCK USE | 0.05     | -80        | \$4.00-   | 59417 |
| NET AMOUNT ADJUSTED: |              |           |                   |          |            | \$4.00-   |       |

| TYP                  | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJST | AMT-ADJST | GL #  |
|----------------------|------------|------|---------------|----------|-----------|-----------|-------|
| RCS                  | 544-P09119 | CUI  | VMC 73152-RSR | 0.05     | -68       | \$3.40-   | 12492 |
| NET AMOUNT ADJUSTED: |            |      |               |          |           | \$3.40-   |       |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM        |       |
|----------------------|--------------|-----------|---------|----------|------------|-----------|-------|
| 01282-053            | CAUSTIC SODA | CONSIGNED | CUST    | BEAD     | 001 EA     | PTK EA    |       |
| TYP                  | REF-#        | OPID      | REASON  | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |
| RCS                  | 544-P08798   | C09       | 15X3000 | 1.06     | -15        | \$15.90-  | 12492 |
| NET AMOUNT ADJUSTED: |              |           |         |          |            | \$15.90-  |       |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |
|----------------------|--------------|-----------|--------|----------|------------|-------------|----------|
| 01316-001            | TRITON N-101 |           | *      | LIQ      | 001 GL     | BLK LB      |          |
| TYP                  | REF-#        | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |
| RPK                  | 544-P09253   | C09       | 17X480 | 36.38    | -8,160     | \$2,968.61- | 13116501 |
| NET AMOUNT ADJUSTED: |              |           |        |          |            | \$2,968.61- |          |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM           |          |
|----------------------|--------------|-----------|---------|----------|------------|--------------|----------|
| 01336-001            | TRITON X-100 |           | *       | LIQ      | 001 GL     | BLK LB       |          |
| TYP                  | REF-#        | OPID      | REASON  | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |
| RPK                  | 544-P09359   | C09       | 100X480 | 60.88    | -48,000    | \$29,222.40- | 13116501 |
| NET AMOUNT ADJUSTED: |              |           |         |          |            | \$29,222.40- |          |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM          |          |
|----------------------|---------------|-----------|---------|----------|------------|-------------|----------|
| 01361-001            | SULFURIC ACID | 66 BE     | *       | LIQ      | 001 LB     | BLK LB      |          |
| TYP                  | REF-#         | OPID      | REASON  | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |
| RPK                  | 544-P09213    | C09       | 162X225 | 2.06     | -36,450    | \$750.87-   | 13116501 |
|                      | 544-P09235    | C09       | 102X225 | 2.06     | -22,950    | \$472.77-   |          |
|                      | 544-P09342    | C09       | 104X225 | 2.06     | -23,400    | \$482.04-   |          |
|                      | 544-P09347    | C09       | 50X700  | 2.06     | -35,000    | \$721.00-   |          |
| NET AMOUNT ADJUSTED: |               |           |         |          |            | \$2,426.68- |          |

MCK0062113

DATE: 01/01/85 TIME: 21:13:07 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 12/84

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD        | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|---------------|-----------|-------------|----------|---------------|--------------|----------|--|
| 01361-002            | SULFURIC ACID | 96%       | *           | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#         | OPID      | REASON      | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09275    | CUG       |             | 2.07     | -99,000       | \$2,049.30-  | 13116501 |  |
|                      | 544-P09368    | CUI       | TRNDR TO 66 | 2.07     | -99,000       | \$2,049.30-  |          |  |
|                      | 544-P09381    | CUG       |             | 2.07     | -99,000       | \$2,049.30-  |          |  |
|                      | 544-P09399    | C09       | 80X700      | 2.07     | -56,000       | \$1,159.20-  |          |  |
|                      | 544-P09438    | CUI       | 140 X 700   | 2.07     | -98,000       | \$2,028.60-  |          |  |
|                      | 544-P09456    | CUI       | 100 X 225   | 2.07     | -22,500       | \$465.75-    |          |  |
|                      | 544-P09465    | CUG       |             | 2.07     | -99,000       | \$2,049.30-  |          |  |
|                      | 544-P09474    | CUI       | 66 X 700    | 2.07     | -46,200       | \$956.34-    |          |  |
| NET AMOUNT ADJUSTED: |               |           |             |          |               | \$12,807.09- |          |  |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|---------------|-----------|------------------|----------|---------------|------------|-------|--|
| 01361-013            | SULFURIC ACID | 66 BE     | MCKS             | LIQ      | 055 GL RDM EA |            |       |  |
| TYP                  | REF-#         | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH0                  |               | CUI       | PHYS-SHPD TO LA. | 32.56    | +3            | \$97.68    | 59417 |  |
| NET AMOUNT ADJUSTED: |               |           |                  |          |               | \$97.68    |       |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01370-001            | SEC-BUTYL ALCOHOL |           | *      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#             | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09196        | C09       | 18X369 | 31.72    | -6,728        | \$2,134.12- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |           |        |          |               | \$2,134.12- |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|----------------------|-----------|------------------|----------|---------------|-------------|-------|--|
| 01377-001            | CAUSTIC SODA, LIQUID | 50%       | *                | LIQ      | 001 GL BLK LB |             |       |  |
| TYP                  | REF-#                | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| RCS                  | 544-P08807           | CUG       | VULCAN=SDM/BP253 | 8.34     | -25,442       | \$2,121.86- | 12492 |  |
| NET AMOUNT ADJUSTED: |                      |           |                  |          |               | \$2,121.86- |       |  |

| TYP | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|----------------|----------|------------|-------------|----------|
| RPK | 544-P09114 | C09  | 138 X 680      | 8.34     | -48,155    | \$4,016.13- | 13116501 |
|     | 544-P09124 | C09  | 4000G BLEACH   | 8.34     | -6,713     | \$559.86-   |          |
|     | 544-P09160 | C09  | 100X680        | 8.34     | -34,895    | \$2,910.24- |          |
|     | 544-P09170 | C09  | NL BLEND       | 8.34     | -477       | \$39.78-    |          |
|     | 544-P09190 | C09  | 4000G          | 8.34     | -24,083    | \$2,008.52- |          |
|     | 544-P09191 | C09  | 3800G          | 8.34     | -22,546    | \$1,880.34- |          |
|     | 544-P09215 | C09  | 40620#         | 8.34     | -6,524     | \$544.10-   |          |
|     | 544-P09225 | C09  | 4500G          | 8.34     | -18,252    | \$1,522.22- |          |
|     | 544-P09249 | C09  | 3000G          | 8.34     | -17,225    | \$1,436.57- |          |
|     | 544-P09258 | C09  | 1500G          | 8.34     | -4,971     | \$414.58-   |          |
|     | 544-P09277 | C09  | 650G           | 8.34     | -1,902     | \$158.63-   |          |
|     | 544-P09281 | C09  | 27X680         | 8.34     | -9,422     | \$785.79-   |          |
|     | 544-P09312 | C09  | CORR OF P09225 | 8.34     | -1         | \$0.08-     |          |

MCK0062114

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                       |      |         |             |
|------------|-----|-----------------------|------|---------|-------------|
| 544-P09321 | CO9 | 100X680               | 8.34 | -34,895 | \$2,910.24- |
| 544-P09324 | CO9 | 3800G                 | 8.34 | -21,591 | \$1,800.69- |
| 544-P09337 | CO9 | 25X680                | 8.34 | -8,724  | \$727.58-   |
| 544-P09385 | CO9 | 3000G                 | 8.34 | -9,624  | \$802.64-   |
| 544-P09390 | CO9 | 2000G                 | 8.34 | -4,214  | \$351.45-   |
| 544-P09394 | CO9 | 4000G                 | 8.34 | -23,379 | \$1,949.81- |
| 544-P09395 | CO9 | 3800G                 | 8.34 | -21,894 | \$1,825.96- |
| 544-P09396 | CO9 | 3240G                 | 8.34 | -17,380 | \$1,449.49- |
| 544-P09410 | CO9 | 183X680               | 8.34 | -63,857 | \$5,325.67- |
| 544-P09424 | CO9 | 4076G                 | 8.34 | -6,546  | \$545.94-   |
| 544-P09432 | CUI | DOUGLAS W15115 W15120 | 8.34 | -3,625  | \$302.33-   |
| 544-P09435 | CUI | 25 PACIFICA DR        | 8.34 | -8,724  | \$727.58-   |
| 544-P09437 | CUI | 109 ACT II            | 8.34 | -38,035 | \$3,172.12- |
| 544-P09447 | CUI | NORRIS W15077         | 8.34 | -22,222 | \$1,853.31- |

NET AMOUNT ADJUSTED: \$40,021.65-

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|----------------------|-----------|---------------------|----------|------------|-------------|-------|--|
| 01377-005            | CAUSTIC SODA, LIQUID | 50%       | MCKS                | LIQ      | 055 GL RDM | EA          |       |  |
| TYP                  | REF-#                | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD                  |                      | CUI       | RCD WRNG SKU P09160 | 45.63    | +100       | \$4,563.00  | 59417 |  |
|                      |                      | CUI       | CRCT RCT OF P09160  | 45.63    | -100       | \$4,563.00- |       |  |
|                      |                      | CUI       | RCD WRNG SKU P09160 | 45.63    | -100       | \$4,563.00- |       |  |
| NET AMOUNT ADJUSTED: |                      |           |                     |          |            | \$4,563.00- |       |  |

|                      |            |      |        |          |            |            |          |
|----------------------|------------|------|--------|----------|------------|------------|----------|
| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P09460 | CO9  | BLEND  | 45.63    | -1         | \$45.63-   | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$45.63-   |          |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|----------------------|-----------|-----------------|----------|------------|------------|-------|--|
| 01377-006            | CAUSTIC SODA, LIQUID | 50%       | MCKS            | LIQ      | 055 GL DRM | EA         |       |  |
| TYP                  | REF-#                | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                      | CUI       | CRCT RCT P00160 | 49.81    | +100       | \$4,981.00 | 59417 |  |
| NET AMOUNT ADJUSTED: |                      |           |                 |          |            | \$4,981.00 |       |  |

|                      |            |      |             |          |            |            |          |
|----------------------|------------|------|-------------|----------|------------|------------|----------|
| TYP                  | REF-#      | OPID | REASON      | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P09259 | CO9  | 45390 BLEND | 49.81    | -1         | \$49.81-   | 13116501 |
|                      | 544-P09341 | CO9  | 4200G BLEND | 49.81    | -1         | \$49.81-   |          |
| NET AMOUNT ADJUSTED: |            |      |             |          |            | \$99.62-   |          |

MCK0062115

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD            | FORM     | -PACKAGE-- | UM |            |  |       |
|----------------------|------------------|------------|-----------------|----------|------------|----|------------|--|-------|
| 01391-004            | CHELATING AGENTS | VERSNE 100 | MCKS            | LIQ      | 055 GL RDM | EA |            |  |       |
| TYP                  | REF-#            | OPID       | REASON          | AVG-COST | QTY-ADJUST |    | AMT-ADJUST |  | GL #  |
| OH0                  |                  | CUI        | SHIPPED TO BRCH | 192.77   | +1         |    | \$192.77   |  | 59417 |
| NET AMOUNT ADJUSTED: |                  |            |                 |          |            |    | \$192.77   |  |       |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD     | FORM     | -PACKAGE-- | UM |              |  |          |
|----------------------|------------------|------------|----------|----------|------------|----|--------------|--|----------|
| 01391-005            | CHELATING AGENTS | VERSNE 100 | *        | LIQ      | 001 GL BLK | LB |              |  |          |
| TYP                  | REF-#            | OPID       | REASON   | AVG-COST | QTY-ADJUST |    | AMT-ADJUST   |  | GL #     |
| RPK                  | 544-P09430       | CUI        | 60 X 600 | 30.55    | -35,940    |    | \$10,979.67- |  | 13116501 |
|                      | 544-P09436       | CUI        | 14 X 600 | 30.55    | -8,400     |    | \$2,566.20-  |  |          |
| NET AMOUNT ADJUSTED: |                  |            |          |          |            |    | \$13,545.87- |  |          |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD   | FORM     | -PACKAGE-- | UM |              |  |          |
|----------------------|------------------|------------|--------|----------|------------|----|--------------|--|----------|
| 01391-019            | CHELATING AGENTS | EDTANA4-38 | *      | LIQ      | 001 GL BLK | LB |              |  |          |
| TYP                  | REF-#            | OPID       | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST   |  | GL #     |
| RPK                  | 544-P09325       | CO9        | 74X600 | 27.50    | -44,890    |    | \$12,344.75- |  | 13116501 |
|                      | 544-P09354       | CO9        | 53X600 | 27.50    | -32,480    |    | \$8,932.00-  |  |          |
| NET AMOUNT ADJUSTED: |                  |            |        |          |            |    | \$21,276.75- |  |          |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM |             |  |          |
|----------------------|------------------------|-----------|--------|----------|------------|----|-------------|--|----------|
| 01439-001            | METHYL ISOBUTYL KETONE |           | *      | LIQ      | 001 GL BLK | LB |             |  |          |
| TYP                  | REF-#                  | OPID      | REASON | AVG-COST | QTY-ADJUST |    | AMT-ADJUST  |  | GL #     |
| RPK                  | 544-P09112             | CO9       | 18X366 | 44.18    | -6,840     |    | \$3,021.91- |  | 13116501 |
| NET AMOUNT ADJUSTED: |                        |           |        |          |            |    | \$3,021.91- |  |          |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM |            |  |       |
|----------------------|------------------|-----------|-------------------------|----------|------------|----|------------|--|-------|
| 01532-001            | ISOBUTYL ACETATE |           | *                       | LIQ      | 001 GL BLK | LB |            |  |       |
| TYP                  | REF-#            | OPID      | REASON                  | AVG-COST | QTY-ADJUST |    | AMT-ADJUST |  | GL #  |
| OH0                  |                  | CUI       | CCRCT RPK DRW ON P09454 | 43.99    | +1         |    | \$0.44     |  | 59417 |
| NET AMOUNT ADJUSTED: |                  |           |                         |          |            |    | \$0.44     |  |       |

| TYP                  | REF-#      | OPID | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|--------------|----------|------------|-------------|----------|
| RPK                  | 544-P09446 | CO9  | 4X397        | 43.99    | -1         | \$0.44-     | 13116501 |
|                      | 544-P09454 | CUI  | SANBAR BLEND | 43.99    | -3,880     | \$1,706.81- |          |
| NET AMOUNT ADJUSTED: |            |      |              |          |            | \$1,707.25- |          |

MCK0062116

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-----------------------|-----------|---------------|----------|---------------|--------------|----------|--|
| 01571-001            | CAUSTIC POTASH LIQUID | 50%       | *             | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#                 | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09162            | C09       | 60X660        | 16.37    | -35,640       | \$5,834.27-  | 13116501 |  |
|                      | 544-P09397            | C09       | 4000G         | 16.37    | -44,193       | \$7,234.39-  |          |  |
|                      | 544-P09405            | CUG       |               | 16.37    | -35,640       | \$5,834.27-  |          |  |
|                      | 544-P09489            | C09       | 50X660        | 16.37    | -33,000       | \$5,402.10-  |          |  |
|                      | 544-P09490            | C09       | 50X660        | 16.37    | -29,700       | \$4,861.89-  |          |  |
|                      | 544-P09491            | C09       | 50X660        | 16.37    | -33,000       | \$5,402.10-  |          |  |
|                      | 544-P09509            | C09       | 20X660/P09491 | 16.37    | -1            | \$0.16-      |          |  |
| NET AMOUNT ADJUSTED: |                       |           |               |          |               | \$34,569.18- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|-----------------------|-----------|--------------------------|----------|---------------|------------|-------|--|
| 01571-003            | CAUSTIC POTASH LIQUID | 45%       | MCKS                     | LIQ      | 055 GL DRM EA |            |       |  |
| TYP                  | REF-#                 | OPID      | REASON                   | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD                  |                       | CUI       | RCD ON WRNG SKU 01571008 | 122.76   | +60           | \$7,365.60 | 59417 |  |
| NET AMOUNT ADJUSTED: |                       |           |                          |          |               | \$7,365.60 |       |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD                    | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|-----------------------|-----------|-------------------------|----------|---------------|-------------|-------|--|
| 01571-008            | CAUSTIC POTASH LIQUID | 45%       | MCKS                    | LIQ      | 055 GL RDM EA |             |       |  |
| TYP                  | REF-#                 | OPID      | REASON                  | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OHD                  |                       | CUI       | RCD ONWRNG SKU S/B-1003 | 118.12   | -60           | \$7,087.20- | 59417 |  |
| NET AMOUNT ADJUSTED: |                       |           |                         |          |               | \$7,087.20- |       |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|--------------------------|-----------|--------------------|----------|---------------|-------------|-------|--|
| 01667-002            | CAUSTIC SODA(GLUCONATED) | 50%       | *                  | LIQ      | 001 GL BLK LB |             |       |  |
| TYP                  | REF-#                    | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| RCS                  | 544-P09394               | CUI       | CRCT RCT OF P09018 | 5.16     | -23,131       | \$1,193.56- | 12492 |  |
| NET AMOUNT ADJUSTED: |                          |           |                    |          |               | \$1,193.56- |       |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD       | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|------------|-----------|------------|----------|---------------|------------|-------|--|
| 01675-001            | HEPTANES   |           | *          | LIQ      | 001 GL BLK LB |            |       |  |
| TYP                  | REF-#      | OPID      | REASON     | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P09327 | CUI       | S/B WT VAR | 18.58    | -22           | \$4.09-    | 12492 |  |
| NET AMOUNT ADJUSTED: |            |           |            |          |               | \$4.09-    |       |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|--------|----------|------------|-------------|----------|
| RPK                  | 544-P09398 | C09  | 4000G  | 18.58    | -8,378     | \$1,556.63- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$1,556.63- |          |

MCK00062117

PGM: CK02L2IP VER 01.4  
DATE: 01/01/85 TIME: 21:13:07

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
12/84

REPORT NO: CK02R25A PAGE: 32  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD        | FORM | -PACKAGE-- | UM         |            |          |
|----------------------|------------|-----------|-------------|------|------------|------------|------------|----------|
| 01675-002            | HEPTANES   |           | MCKS        | LIQ  | 055 GL     | DRM EA     |            |          |
| TYP                  | REF-#      | OPID      | REASON      |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P09185 | C09       | 10X372      |      | 82.43      | -4         | \$329.72-  | 13116501 |
|                      | 544-P09454 | CUI       | SANBARBLEND |      | 82.43      | -5         | \$412.15-  |          |
| NET AMOUNT ADJUSTED: |            |           |             |      |            |            | \$741.87-  |          |

| PROD-CD              | PROD-NAME                 | QUALIFIER  | GRAD   | FORM | -PACKAGE-- | UM         |             |          |
|----------------------|---------------------------|------------|--------|------|------------|------------|-------------|----------|
| 01696-002            | MINERAL SPIRITS, ODORLESS | SHELLSOL71 | MCKS   | LIQ  | 055 GL     | DRM EA     |             |          |
| TYP                  | REF-#                     | OPID       | REASON |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P09351                | C09        | 10X349 |      | 110.36     | -10        | \$1,103.80- | 13116501 |
| NET AMOUNT ADJUSTED: |                           |            |        |      |            |            | \$1,103.80- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM | -PACKAGE-- | UM         |             |          |
|----------------------|------------|-----------|----------|------|------------|------------|-------------|----------|
| 01724-002            | DALPAD A   |           | *        | LIQ  | 001 GL     | BLK LB     |             |          |
| TYP                  | REF-#      | OPID      | REASON   |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P09138 | C09       | 13 X 505 |      | 59.40      | -6,800     | \$4,039.20- | 13116501 |
| NET AMOUNT ADJUSTED: |            |           |          |      |            |            | \$4,039.20- |          |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD   | FORM | -PACKAGE-- | UM         |             |          |
|----------------------|-----------------------|-----------|--------|------|------------|------------|-------------|----------|
| 01806-001            | MCKSOLV VM & P NAPTHA |           | *      | LIQ  | 001 GL     | BLK LB     |             |          |
| TYP                  | REF-#                 | OPID      | REASON |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P09366            | C09       | 49X347 |      | 19.03      | -17,003    | \$3,235.67- | 13116501 |
| NET AMOUNT ADJUSTED: |                       |           |        |      |            |            | \$3,235.67- |          |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD   | FORM | -PACKAGE-- | UM         |            |          |
|----------------------|-----------------------|-----------|--------|------|------------|------------|------------|----------|
| 01806-002            | MCKSOLV VM & P NAPTHA |           | MCKS   | LIQ  | 055 GL     | DRM EA     |            |          |
| TYP                  | REF-#                 | OPID      | REASON |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P09398            | C09       | 4000G  |      | 84.70      | -3         | \$254.10-  | 13116501 |
| NET AMOUNT ADJUSTED: |                       |           |        |      |            |            | \$254.10-  |          |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD          | FORM | -PACKAGE-- | UM         |            |          |
|----------------------|-------------|-----------|---------------|------|------------|------------|------------|----------|
| 02398-001            | LIME SLURRY | 40-42%    | *             | LIQ  | 001 GL     | BLK LB     |            |          |
| TYP                  | REF-#       | OPID      | REASON        |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P09191  | C09       | 3800G         |      | 1.83       | -4,905     | \$89.76-   | 13116501 |
|                      | 544-P09249  | C09       | 3000G         |      | 1.83       | -3,924     | \$71.81-   |          |
|                      | 544-P09324  | C09       | 3800G         |      | 1.83       | -4,905     | \$89.76-   |          |
|                      | 544-P09395  | C09       | 3800G         |      | 1.83       | -4,905     | \$89.76-   |          |
|                      | 544-P09447  | CUI       | NORRIS W15077 |      | 1.83       | -4,905     | \$89.76-   |          |
| NET AMOUNT ADJUSTED: |             |           |               |      |            |            | \$430.85-  |          |

MCK0062118

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|--------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02704-001            | DIMETHYL FORMAMIDE |           | *      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09358         | C09       | 55X430 | 38.20    | -24,190       | \$9,240.58- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                    |           |        |          |               | \$9,240.58- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|--------------|-----------|----------|----------|---------------|-------------|----------|--|
| 02716-001            | 140F SOLVENT |           | *        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#        | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09172   | C09       | 50 X 370 | 18.19    | -18,870       | \$3,432.45- | 13116501 |  |
| NET AMOUNT ADJUSTED: |              |           |          |          |               | \$3,432.45- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02721-001            | GLYCOL ETHER DPM |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09163       | C09       | 10X435 | 35.30    | -4,420        | \$1,560.26- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |               | \$1,560.26- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD    | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|---------|----------|---------------|--------------|----------|--|
| 02755-013            | HYDROGEN PEROXIDE |           | MSS     | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON  | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09256        | C09       | 132X500 | 23.08    | -66,000       | \$15,232.80- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |           |         |          |               | \$15,232.80- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02755-015            | HYDROGEN PEROXIDE |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#             | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09183        | C09       | 30X500 | 31.41    | -15,000       | \$4,711.50- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |           |        |          |               | \$4,711.50- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|--------|----------|---------------|--------------|----------|--|
| 02755-017            | HYDROGEN PEROXIDE |           | MSS    | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09184        | C09       | 25X500 | 33.04    | -12,500       | \$4,130.00-  | 13116501 |  |
|                      | 544-P09194        | C09       | 81X500 | 33.04    | -40,500       | \$13,381.20- |          |  |
|                      | 544-P09345        | CUG       |        | 33.04    | -1,464        | \$483.71-    |          |  |
|                      | 544-P09391        | C09       | 25X500 | 33.04    | -12,500       | \$4,130.00-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |        |          |               | \$22,124.91- |          |  |

MCK0062119

PGM: CK02L21P VER 01.4

DATE: 01/01/85 TIME: 21:13:07 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
12/84

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 34

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME                 | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|---------------------------|-----------|--------|----------|---------------|-------------|----------|--|--|--|
| 02757-001            | MINERAL SPIRITS, ODORLESS |           | *      | LIQ      | 001 GL BLK LB |             |          |  |  |  |
| TYP                  | REF-#                     | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P09250                | CO9       | 35X349 | 26.83    | -12,431       | \$3,335.24- | 13116501 |  |  |  |
| NET AMOUNT ADJUSTED: |                           |           |        |          |               | \$3,335.24- |          |  |  |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD      | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|------------------------|-----------|-----------|----------|---------------|-------------|----------|--|--|--|
| 02758-001            | MINERAL SPIRITS, SHORT |           | *         | LIQ      | 001 GL BLK LB |             |          |  |  |  |
| TYP                  | REF-#                  | OPID      | REASON    | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P09278             | CUI       | 38 X 360  | 18.21    | -13,460       | \$2,451.07- | 13116501 |  |  |  |
|                      | 544-P09453             | CUI       | FLOKEM #3 | 18.21    | -10,385       | \$1,891.11- |          |  |  |  |
| NET AMOUNT ADJUSTED: |                        |           |           |          |               | \$4,342.18- |          |  |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|--|--|
| 02761-001            | GLYCOL ETHER DE |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P09164      | CO9       | 4460   | 50.29    | -4,460        | \$2,242.93- | 13116501 |  |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$2,242.93- |          |  |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|-------------------|-----------|--------|----------|---------------|-------------|----------|--|--|--|
| 02806-007            | TRICHLOROETHYLENE |           | MSS    | LIQ      | 001 LB BLK LB |             |          |  |  |  |
| TYP                  | REF-#             | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P09374        | CO9       | 10X660 | 36.22    | -6,720        | \$2,433.98- | 13116501 |  |  |  |
| NET AMOUNT ADJUSTED: |                   |           |        |          |               | \$2,433.98- |          |  |  |  |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |  |
|----------------------|---------------|-----------|--------|----------|---------------|-------------|----------|--|--|--|
| 02816-001            | ETHYL HEXANOL |           | *      | LIQ      | 001 LB BLK LB |             |          |  |  |  |
| TYP                  | REF-#         | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |  |
| RPK                  | 544-P09306    | CO9       | 37X383 | 40.38    | -13,940       | \$5,628.97- | 13116501 |  |  |  |
| NET AMOUNT ADJUSTED: |               |           |        |          |               | \$5,628.97- |          |  |  |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM            |       |  |  |  |
|----------------------|-------------|-----------|--------------------------|----------|---------------|---------------|-------|--|--|--|
| 02871-001            | GETTY 50/50 |           | MCKS                     | LIQ      | 055 GL DRM EA |               |       |  |  |  |
| TYP                  | REF-#       | OPID      | REASON                   | AVG-COST | QTY-ADJUST    | AMT-ADJUST    | GL #  |  |  |  |
| RCS                  | 544-P09001  | CUI       | NO SDM/CRCT P09001-ERROR | 96.85    | -4,840        | \$468,754.00- | 12492 |  |  |  |
| NET AMOUNT ADJUSTED: |             |           |                          |          |               | \$468,754.00- |       |  |  |  |

MCK0062120

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 38  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME        | QUALIFIER | GRAD        | FORM     | -PACKAGE-- | UM           |       |  |
|-----------|------------------|-----------|-------------|----------|------------|--------------|-------|--|
| 01002-019 | PROPYLENE GLYCOL | MCKS      | *           | LIQ      | 055 GL NOM | EA           |       |  |
| TYP       | REF-#            | OPID      | REASON      | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |
| OHD       |                  | CUI       | S/B USP MTL | 205.35   | -240       | \$49,284.00- | 59417 |  |

NET AMOUNT ADJUSTED: \$49,284.00-

| PROD-CD   | PROD-NAME              | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|------------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01004-003 | HYDROXYACETIC ACID 70% |           | MCKS           | LIQ      | 055 GL RDM | EA         |       |  |
| TYP       | REF-#                  | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD       |                        | CUI       | PRE-PHYS COUNT | 338.47   | +1         | \$338.47   | 59417 |  |

NET AMOUNT ADJUSTED: \$338.47

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                      | FORM     | -PACKAGE-- | UM          |          |  |
|-----------|------------|-----------|---------------------------|----------|------------|-------------|----------|--|
| 01011-002 | CHLORINE   |           | *                         | GAS      | 001 LB BLK | LB          |          |  |
| TYP       | REF-#      | OPID      | REASON                    | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P09522 | C09       | 29XTN                     | 7.44     | -38,000    | \$2,827.20- | 13116501 |  |
|           | 544-P09532 | C09       | 4500G BLEACH              | 7.44     | -6,733     | \$500.94-   |          |  |
|           | 544-P09552 | C09       | 11XTN;83X150              | 7.44     | -34,450    | \$2,563.08- |          |  |
|           | 544-P09565 | C09       | 31XTN                     | 7.44     | -62,000    | \$4,612.80- |          |  |
|           | 544-P09567 | C09       | SET UP RSV TNS PER F.CALU | 7.44     | -1         | \$0.07-     |          |  |
|           | 544-P09597 | C09       | 20XTNS/35X150             | 7.44     | -45,450    | \$3,381.48- |          |  |
|           | 544-P09610 | C09       | 4500G BLEACH              | 7.44     | -6,183     | \$460.02-   |          |  |
|           | 544-P09620 | C09       | 20XTN                     | 7.44     | -40,000    | \$2,976.00- |          |  |
|           | 544-P09628 | C09       | 29XTN                     | 7.44     | -58,000    | \$4,315.20- |          |  |
|           | 544-P09646 | C09       | 99X150                    | 7.44     | -14,850    | \$1,104.84- |          |  |
|           | 544-P09659 | C09       | FLETCHER OIL W15430       | 7.44     | -2,325     | \$172.98-   |          |  |
|           | 544-P09664 | C09       | 23XTN                     | 7.44     | -46,000    | \$3,422.40- |          |  |
|           | 544-P09680 | C09       | 50 X 550                  | 7.44     | -3,603     | \$268.06-   |          |  |
|           | 544-P09681 | C09       | 6XTN;17X150;60X150GVT     | 7.44     | -23,550    | \$1,752.12- |          |  |
|           | 544-P09713 | C09       | 13XTN                     | 7.44     | -26,000    | \$1,934.40- |          |  |
|           | 544-P09738 | C09       | 5 X TN                    | 7.44     | -10,000    | \$744.00-   |          |  |
|           | 544-P09739 | C09       | 12 X TN                   | 7.44     | -24,000    | \$1,785.60- |          |  |
|           | 544-P09747 | C09       | 35 X TN                   | 7.44     | -70,000    | \$5,208.00- |          |  |
|           | 544-P09771 | C09       | 31X10                     | 7.44     | -62,000    | \$4,612.80- |          |  |
|           | 544-P09776 | C09       | NI IND W15573             | 7.44     | -3,838     | \$285.55-   |          |  |
|           | 544-P09784 | C09       | 50X550 BLEACH             | 7.44     | -3,602     | \$267.99-   |          |  |
|           | 544-P09792 | C09       | 6XTN                      | 7.44     | -12,000    | \$892.80-   |          |  |
|           | 544-P09803 | C09       | 25 X TN                   | 7.44     | -50,000    | \$3,720.00- |          |  |
|           | 544-P09830 | C09       | 15 X TN                   | 7.44     | -30,000    | \$2,232.00- |          |  |
|           | 544-P09845 | C09       | 15 X TN                   | 7.44     | -30,000    | \$2,232.00- |          |  |
|           | 544-P09850 | C09       | NI IND W15483             | 7.44     | -1,297     | \$96.50-    |          |  |
|           | 544-P09866 | C09       | 24 X TN                   | 7.44     | -48,000    | \$3,571.20- |          |  |
|           | 544-P09867 | C09       | 86X150(SEE ALSO P09866)   | 7.44     | -12,900    | \$959.76-   |          |  |
|           | 544-P09894 | C09       | 9X150/17XTN               | 7.44     | -35,350    | \$2,630.04- |          |  |
|           | 544-P09895 | C09       | 121X150/23XTN             | 7.44     | -64,150    | \$4,772.76- |          |  |
|           | 544-P09915 | C09       | 12/TN                     | 7.44     | -24,000    | \$1,785.60- |          |  |

NET AMOUNT ADJUSTED: \$66,088.19-

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 39  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-----------|-----------|------------------------|----------|------------|-------------|-------|--|
| 01011-003            | CHLORINE  |           | MCKS                   | GAS      | 001 TN CYL | EA          |       |  |
| TYP                  | REF-#     | OPID      | REASON                 | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| OH                   |           | CUI       | PRE PHYS COUNT         | 185.00   | -9         | \$1,665.00- | 59417 |  |
|                      |           | CUI       | ADJ TO ALW 4 OPN MTO'S | 185.00   | -2         | \$370.00-   |       |  |
| NET AMOUNT ADJUSTED: |           |           |                        |          |            | \$2,035.00- |       |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|-----------|-----------|----------------|----------|------------|-----------|-------|--|
| 01011-004            | CHLORINE  |           | MCKS           | GAS      | 150 LB CYL | EA        |       |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH                   |           | CUI       | PRE PHYS COUNT | 24.76    | -5         | \$123.80- | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$123.80- |       |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-------------|-----------|----------------|----------|------------|------------|-------|--|
| 01013-001            | ACETIC ACID | GLACIAL   | *              | LIQ      | 001 GL BLK | LB         |       |  |
| TYP                  | REF-#       | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST  | GL #  |  |
| OH                   |             | CUI       | PRE PHYS COUNT | 23.53    | +6,873     | \$1,617.22 | 59417 |  |
| NET AMOUNT ADJUSTED: |             |           |                |          |            | \$1,617.22 |       |  |

| TYP                  | REF-#      | OPID | REASON   | AVG-COST | QTY-ADJST | AMT-ADJST    | GL #     |  |
|----------------------|------------|------|----------|----------|-----------|--------------|----------|--|
| RPK                  | 544-P09528 | C09  | 20X110   | 23.53    | -2,200    | \$517.66-    | 13116501 |  |
|                      | 544-P09553 | C09  | 80X450   | 23.53    | -32,400   | \$7,623.72-  |          |  |
|                      | 544-P09561 | C09  | 5X290    | 23.53    | -9,100    | \$2,141.23-  |          |  |
|                      | 544-P09561 | C09  | 5X2990   | 23.53    | -2,275    | \$535.31-    |          |  |
|                      | 544-P09800 | C09  | 4 X 2990 | 23.53    | -9,568    | \$2,251.35-  |          |  |
|                      | 544-P09858 | C09  | 7 X 2990 | 23.53    | -16,744   | \$3,939.86-  |          |  |
| NET AMOUNT ADJUSTED: |            |      |          |          |           | \$17,009.13- |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|-------------|-----------|----------------|----------|------------|-----------|-------|--|
| 01013-006            | ACETIC ACID | 80% TECH  | MCKS           | LIQ      | 055 GL RDM | EA        |       |  |
| TYP                  | REF-#       | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH                   |             | CUI       | PRE PHYS COUNT | 97.32    | -3         | \$291.96- | 59417 |  |
| NET AMOUNT ADJUSTED: |             |           |                |          |            | \$291.96- |       |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM        |          |  |
|----------------------|-------------|-----------|--------|----------|------------|-----------|----------|--|
| 01013-011            | ACETIC ACID | 56%       | MCKS   | LIQ      | 055 GL RDM | EA        |          |  |
| TYP                  | REF-#       | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |  |
| RPK                  | 544-P09561  | C09       | 5X2990 | 72.59    | -5         | \$362.95- | 13116501 |  |
| NET AMOUNT ADJUSTED: |             |           |        |          |            | \$362.95- |          |  |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 40  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM | -PACKAGE--    | UM         |              |          |
|----------------------|------------|-----------|----------------|------|---------------|------------|--------------|----------|
| 01018-001            | ACETONE    |           | *              | LIQ  | 001 GL BLK LB |            |              |          |
| TYP                  | REF-#      | OPID      | REASON         |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST   | GL #     |
| OHQ                  |            | CUI       | PRE PHYS COUNT |      | 21.86         | -32,360    | \$7,073.90-  | 59417    |
| NET AMOUNT ADJUSTED: |            |           |                |      |               |            | \$7,073.90-  |          |
| TYP                  | REF-#      | OPID      | REASON         |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST   | GL #     |
| RPK                  | 544-P09622 | C09       | 20X350         |      | 21.86         | -7,140     | \$1,560.80-  | 13116501 |
|                      | 544-P09624 | C09       | 40X357         |      | 21.86         | -14,566    | \$3,184.13-  |          |
|                      | 544-P09775 | CUI       | 84 X 357-RECON |      | 21.86         | -30,588    | \$6,686.54-  |          |
| NET AMOUNT ADJUSTED: |            |           |                |      |               |            | \$11,431.47- |          |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM | -PACKAGE--    | UM         |             |          |
|----------------------|-----------------|-----------|--------|------|---------------|------------|-------------|----------|
| 01053-003            | N-BUTYL ACETATE | 99%       | *      | LIQ  | 001 GL BLK LB |            |             |          |
| TYP                  | REF-#           | OPID      | REASON |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P09778      | C09       | 6X402  |      | 48.27         | -2,622     | \$1,265.64- | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |        |      |               |            | \$1,265.64- |          |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                | FORM | -PACKAGE--    | UM         |            |       |
|----------------------|-----------------|-----------|---------------------|------|---------------|------------|------------|-------|
| 01053-004            | N-BUTYL ACETATE | 99%       | MCKS                | LIQ  | 055 GL DRM EA |            |            |       |
| TYP                  | REF-#           | OPID      | REASON              |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST | GL #  |
| OHQ                  |                 | CUI       | PRE PHYS COUNT CORR |      | 219.71        | -1         | \$219.71-  | 59417 |
|                      |                 | CUI       | PRE PHYS COUNT      |      | 219.71        | +2         | \$439.42   |       |
| NET AMOUNT ADJUSTED: |                 |           |                     |      |               |            | \$219.71   |       |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM | -PACKAGE--    | UM         |             |          |
|----------------------|-----------------|-----------|--------|------|---------------|------------|-------------|----------|
| 01057-001            | GLYCOL ETHER EM |           | MSS    | LIQ  | 001 GL BLK LB |            |             |          |
| TYP                  | REF-#           | OPID      | REASON |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P09675      | C09       | 37X440 |      | 35.84         | -16,330    | \$5,852.67- | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |        |      |               |            | \$5,852.67- |          |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD     | FORM | -PACKAGE--    | UM         |             |          |
|----------------------|-----------------|-----------|----------|------|---------------|------------|-------------|----------|
| 01060-001            | GLYCOL ETHER EE |           | MSS      | LIQ  | 001 LB BLK LB |            |             |          |
| TYP                  | REF-#           | OPID      | REASON   |      | AVG-COST      | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P09638      | C09       | 17 X 425 |      | 45.90         | -7,620     | \$3,497.58- | 13116501 |
| NET AMOUNT ADJUSTED: |                 |           |          |      |               |            | \$3,497.58- |          |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 41  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|----------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01062-004            | AMMONIUM THIOSULFATE |           | MCKS           | LIQ      | 055 GL RDM | EA         |       |  |
| TYP                  | REF-#                | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                      | CUI       | PRE PHYS COUNT | 85.36    | -2         | \$170.72-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                      |           |                |          |            | \$170.72-  |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|--------------|-----------|--------|----------|------------|------------|----------|--|
| 01066-002            | DEQUEST 2000 |           | MSS    | SOLN     | 600 LB DRM | EA         |          |  |
| TYP                  | REF-#        | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P09642   | C09       | 40000# | 433.68   | -1         | \$433.68-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |              |           |        |          |            | \$433.68-  |          |  |

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|----------------|-----------|--------|----------|------------|-------------|----------|--|
| 01079-002            | DIETHANOLAMINE |           | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#          | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09604     | C09       | 18X480 | 37.50    | -9,080     | \$3,405.00- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                |           |        |          |            | \$3,405.00- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|------------------|----------|------------|------------|-------|--|
| 01080-006            | GLYCOL ETHER PM |           | MCKS             | LIQ      | 055 GL NDM | EA         |       |  |
| TYP                  | REF-#           | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                 | CUI       | NOT RPT'D ON J/T | 175.70   | +1         | \$175.70   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                  |          |            | \$175.70   |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM           |       |  |
|----------------------|-----------------|-----------|---------------------|----------|------------|--------------|-------|--|
| 01081-001            | GLYCOL ETHER EB |           | MSS                 | LIQ      | 001 GL BLK | LB           |       |  |
| TYP                  | REF-#           | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |
| OHD                  |                 | CUI       | SPILLED & CONTAINED | 35.00    | -750       | \$262.50-    | 59417 |  |
|                      |                 | CUI       | PRE PHYS COUNT      | 35.00    | -32,319    | \$11,311.65- |       |  |
| NET AMOUNT ADJUSTED: |                 |           |                     |          |            | \$11,574.15- |       |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
|----------------------|------------|------|--------|----------|------------|--------------|----------|--|
| RPK                  | 544-P09676 | C09  | 40X415 | 35.00    | -16,932    | \$5,926.20-  | 13116501 |  |
|                      | 544-P09712 | C09  | 55X415 | 35.00    | -23,282    | \$8,148.70-  |          |  |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$14,074.90- |          |  |

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DATE: 02/04/85 TIME: 13:32:21

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |  |
|----------------------|-----------------|-----------|----------------|----------|------------|-----------|-------|--|--|
| 01088-007            | GLYCOL ETHER DB |           |                | LIQ      | 055 GL DRM | EA        |       |  |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |  |
| OHD                  |                 | CUI       | PRE PHYS COUNT | 244.89   | +1         | \$244.89  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$244.89  |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01104-005            | GLYCERINE | 96%       |                | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST  | GL #  |  |  |
| OHD                  |           | CUI       | PRE PHYS COUNT | 469.08   | +6         | \$2,814.48 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$2,814.48 |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------|-----------|----------------|----------|------------|-------------|-------|--|--|
| 01108-008            | FREON     | TE        |                | LIQ      | 055 GL DRM | EA          |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |  |
| OHD                  |           | CUI       | PRE PHYS COUNT | 645.39   | -2         | \$1,290.78- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$1,290.78- |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------|-----------|----------|----------|------------|-------------|-------|--|--|
| 01110-001            | FREON     | TF        |          | LIQ      | 001 GL BLK | LB          |       |  |  |
| TYP                  | REF-#     | OPID      | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |  |
| OHD                  |           | CUI       | PHYSICAL | 84.31    | -1,970     | \$1,660.91- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |          |          |            | \$1,660.91- |       |  |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJST | AMT-ADJST    | GL #     |
|----------------------|------------|------|--------|----------|-----------|--------------|----------|
| RPK                  | 544-P09797 | C09  | 52X690 | 84.31    | -36,598   | \$30,855.77- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |           | \$30,855.77- |          |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|--------------------|-----------|------------------------|----------|------------|--------------|----------|--|--|
| 01113-007            | BORAX PENTAHYDRATE | 5 MOL     | *                      | GRAN     | 001 LB BLK | LB           |          |  |  |
| TYP                  | REF-#              | OPID      | REASON                 | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |  |
| RPK                  | 544-P09263         | C09       | 2020X100               | 11.65    | -99,550    | \$11,597.58- | 13116501 |  |  |
|                      | 544-P09263         | C09       | 2020X100               | 11.65    | -99,550    | \$11,597.58- |          |  |  |
|                      | 544-P09365         | C09       | 703X100/PARTIAL FILL   | 11.65    | -70,300    | \$8,189.95-  |          |  |  |
|                      | 544-P09487         | C09       | 1957 X 100             | 11.65    | -66,850    | \$7,788.03-  |          |  |  |
|                      | 544-P09487         | C09       | 1957 X 100             | 11.65    | -66,850    | \$7,788.03-  |          |  |  |
|                      | 544-P09487         | C09       | 1957 X 100             | 11.65    | -66,850    | \$7,788.03-  |          |  |  |
|                      | 544-P09765         | CUI       | SUPER SACS             | 11.65    | -11,000    | \$1,281.50-  |          |  |  |
|                      | 544-P09913         | C09       | TIMX302028/P09365/9765 | 11.65    | -1,167     | \$135.96-    |          |  |  |
| NET AMOUNT ADJUSTED: |                    |           |                        |          |            | \$56,166.66- |          |  |  |

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PGM: CK02L2IP VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 43  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01113-008            | BORAX PENTAHYDRATE | 5 MOL     | MCKS           | GRAN     | 100 LB BAG | EA         |       |  |
| TYP                  | REF-#              | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                    | CUI       | PRE PHYS COUNT | 12.18    | +5         | \$60.90    | 59417 |  |
| NET AMOUNT ADJUSTED: |                    |           |                |          |            | \$60.90    |       |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM           |       |  |
|----------------------|-----------|-----------|-------------------------|----------|------------|--------------|-------|--|
| 01120-012            | SODA ASH  | DENSE     | *                       | GRAN     | 001 LB BLK | LB           |       |  |
| TYP                  | REF-#     | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |
| OH0                  |           | CUI       | R/C RCD N ERR-PRE10/31  | 5.50     | -99,999    | \$5,499.95-  | 59417 |  |
|                      |           | CUI       | R/C RCD N ERR-PRE10/31  | 5.50     | -99,501    | \$5,472.56-  |       |  |
|                      |           | CUI       | 2 ALW RCT OF 10% ON IPO | 5.50     | +1         | \$0.06       |       |  |
| NET AMOUNT ADJUSTED: |           |           |                         |          |            | \$10,972.45- |       |  |

| TYP                  | REF-#      | OPID | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
|----------------------|------------|------|-------------------|----------|------------|-------------|-------|--|
| RCS                  | 544-P09660 | CUI  | PREV.ERR-C EXPLTN | 5.50     | -38,501    | \$2,117.56- | 12492 |  |
| NET AMOUNT ADJUSTED: |            |      |                   |          |            | \$2,117.56- |       |  |

| TYP                  | REF-#      | OPID | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
|----------------------|------------|------|------------------------|----------|------------|--------------|----------|--|
| RPK                  | 544-P09290 | C09  | 805X100                | 5.50     | -80,200    | \$4,411.00-  | 13116501 |  |
|                      | 544-P09292 | C09  | 2384X50                | 5.50     | -59,450    | \$3,269.75-  |          |  |
|                      | 544-P09292 | C09  | 2384X50                | 5.50     | -59,450    | \$3,269.75-  |          |  |
|                      | 544-P09335 | C09  | 1917X50                | 5.50     | -95,875    | \$5,273.13-  |          |  |
|                      | 544-P09336 | C09  | 1007X100               | 5.50     | -50,363    | \$2,769.97-  |          |  |
|                      | 544-P09336 | C09  | 1007X100               | 5.50     | -50,362    | \$2,769.91-  |          |  |
|                      | 544-P09548 | C09  | 1455 X 100             | 5.50     | -73,725    | \$4,054.88-  |          |  |
|                      | 544-P09548 | C09  | 1455 X 100             | 5.50     | -73,725    | \$4,054.88-  |          |  |
|                      | 544-P09549 | C09  | 803 X 100              | 5.50     | -82,500    | \$4,537.50-  |          |  |
|                      | 544-P09550 | C09  | 2270 X 50              | 5.50     | -57,850    | \$3,181.75-  |          |  |
|                      | 544-P09550 | C09  | 2270X50                | 5.50     | -57,850    | \$3,181.75-  |          |  |
|                      | 544-P09593 | C09  | 523 X 50               | 5.50     | -24,575    | \$1,351.63-  |          |  |
|                      | 544-P09594 | C09  | 1770 X 100             | 5.50     | -87,713    | \$4,824.22-  |          |  |
|                      | 544-P09594 | C09  | 1770 X 100             | 5.50     | -87,712    | \$4,824.16-  |          |  |
|                      | 544-P09634 | C09  | 976 X 50               | 5.50     | -50,750    | \$2,791.25-  |          |  |
|                      | 544-P09649 | C09  | 1980X100               | 5.50     | -99,000    | \$5,445.00-  |          |  |
|                      | 544-P09649 | C09  | 1980X100               | 5.50     | -99,000    | \$5,445.00-  |          |  |
|                      | 544-P09685 | C09  | SP493594/P09660        | 5.50     | -55,932    | \$3,076.26-  |          |  |
|                      | 544-P09685 | C09  | SP493594/RPO P09660    | 5.50     | -55,933    | \$3,076.32-  |          |  |
|                      | 544-P09686 | C09  | 1589X50(PARTIAL)       | 5.50     | -79,450    | \$4,369.75-  |          |  |
|                      | 544-P09689 | C09  | SEE IPO P09292 ALSO    | 5.50     | -1         | \$0.06-      |          |  |
|                      | 544-P09828 | C09  | REF P09550(CORRECTION) | 5.50     | -1         | \$0.06-      |          |  |
|                      | 544-P09914 | C09  | SP493594/P09686        | 5.50     | -2,265     | \$124.58-    |          |  |
|                      | 544-P09924 | C09  | SP493594/9685          | 5.50     | -1         | \$0.06-      |          |  |
| NET AMOUNT ADJUSTED: |            |      |                        |          |            | \$76,102.62- |          |  |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 44  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |
|-----------|-----------|-----------|----------------|----------|------------|-----------|-------|
| 01120-015 | SODA ASH  | DENSE     | MCKS           | GRAN     | 100 LB BAG | EA        |       |
| TYP       | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |
| OHD       |           | CUI       | PRE PHYS COUNT | 7.00     | -139       | \$973.00- | 59417 |

NET AMOUNT ADJUSTED: \$973.00-

| TYP | REF-#      | OPID | REASON                 | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #  |
|-----|------------|------|------------------------|----------|-----------|-------------|-------|
| RCS | 544-P09082 | CO9  | SDM 3100               | 7.00     | -480      | \$3,360.00- | 12492 |
|     | 544-P09082 | CO9  | SDM3106/FRUIT GROWERS  | 7.00     | -480      | \$3,360.00- |       |
|     | 544-P09082 | CO9  | SDM 3108               | 7.00     | -480      | \$3,360.00- |       |
|     | 544-P09082 | CO9  | SDM3105/L.A.SOAP       | 7.00     | -400      | \$2,800.00- |       |
|     | 544-P09290 | CO9  | SDM3094/WARNER-LAMBERT | 7.00     | -400      | \$2,800.00- |       |
|     | 544-P09548 | CO9  | SDM 3103               | 7.00     | -480      | \$3,360.00- |       |
|     | 544-P09548 | CO9  | SDM 3096               | 7.00     | -480      | \$3,360.00- |       |
|     | 544-P09548 | CO9  | SDM 3101               | 7.00     | -480      | \$3,360.00- |       |

NET AMOUNT ADJUSTED: \$25,760.00-

| TYP | REF-#      | OPID | REASON      | AVG-COST | QTY-ADJST | AMT-ADJST | GL #     |
|-----|------------|------|-------------|----------|-----------|-----------|----------|
| RPK | 544-P09525 | CO9  | 4200G BLEND | 7.00     | -3        | \$21.00-  | 13116501 |

NET AMOUNT ADJUSTED: \$21.00-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |
|-----------|-----------|-----------|----------------|----------|------------|-------------|-------|
| 01120-016 | SODA ASH  | DENSE     | MCKS           | GRAN     | 050 LB BAG | EA          |       |
| TYP       | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |
| OHD       |           | CUI       | PRE PHYS COUNT | 3.64     | -861       | \$3,134.04- | 59417 |

NET AMOUNT ADJUSTED: \$3,134.04-

| TYP | REF-#      | OPID | REASON   | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #  |
|-----|------------|------|----------|----------|-----------|-------------|-------|
| RCS | 544-P08761 | CO9  | SDM 3102 | 3.64     | -960      | \$3,494.40- | 12492 |

NET AMOUNT ADJUSTED: \$3,494.40-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM           |          |
|-----------|-------------------|-----------|------------------------|----------|------------|--------------|----------|
| 01124-070 | HYDROGEN PEROXIDE | 70% TECH  | MSS                    | LIQ      | 001 LB BLK | LB           |          |
| TYP       | REF-#             | OPID      | REASON                 | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |
| RPK       | 544-P09523        | CO9       | BLEND                  | 46.08    | -22,189    | \$10,224.69- | 13116501 |
|           | 544-P09665        | CO9       | 7425G                  | 46.08    | -53,163    | \$24,497.51- |          |
|           | 544-P09729        | CO9       | DILUTION               | 46.08    | -56,626    | \$26,093.26- |          |
|           | 544-P09743        | CO9       | 17,511 DILUTION F/9683 | 46.08    | -12,433    | \$5,729.13-  |          |
|           | 544-P09763        | CUI       | DILUTION               | 46.08    | -15,489    | \$7,137.33-  |          |
|           | 544-P09763        | CO9       | 8300G DILUTION         | 46.08    | -1,547     | \$712.86-    |          |
|           | 544-P09829        | CO9       | 7500G                  | 46.08    | -53,700    | \$24,744.96- |          |

NET AMOUNT ADJUSTED: \$99,139.74-

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BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-------------------|-----------|----------------|----------|------------|-------------|-------|--|--|
| 01124-076            | HYDROGEN PEROXIDE | 50%       | MCKS           | LIQ      | 055 GL RDM | EA          |       |  |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |  |
| OH0                  |                   | CUI       | PRE PHYS COUNT | 175.89   | -13        | \$2,286.57- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$2,286.57- |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-------------------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01124-078            | HYDROGEN PEROXIDE | 35%       | MCKS           | LIQ      | 055 GL RDM | EA         |       |  |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST  | GL #  |  |  |
| OH0                  |                   | CUI       | PRE PHYS COUNT | 128.76   | +39        | \$5,021.64 | 59417 |  |  |
|                      |                   | CUI       | PRE PHYS COUNT | 128.76   | +2         | \$257.52   |       |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$5,279.16 |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER  | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |  |
|----------------------|-------------------|------------|----------------|----------|------------|-----------|-------|--|--|
| 01124-080            | HYDROGEN PEROXIDE | 35%SUPER D | MCKS           | LIQ      | 055 GL RDM | EA        |       |  |  |
| TYP                  | REF-#             | OPID       | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |  |
| OH0                  |                   | CUI        | PRE PHYS COUNT | 169.95   | -1         | \$169.95- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |            |                |          |            | \$169.95- |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |  |
|----------------------|-------------------|-----------|----------------|----------|------------|-----------|-------|--|--|
| 01124-086            | HYDROGEN PEROXIDE | 50%       | CUST           | LIQ      | 055 GL DRM | EA        |       |  |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |  |
| OH0                  |                   | CUI       | PRE PHYS COUNT | 179.01   | -1         | \$179.01- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$179.01- |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |  |
|----------------------|-------------------|-----------|----------------|----------|------------|-----------|-------|--|--|
| 01125-001            | HYDROCHLORIC ACID | 20 BE     | *              | LIQ      | 001 LB BLK | LB        |       |  |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |  |
| OH0                  |                   | CUI       | PRE PHYS COUNT | 3.43     | -3,761     | \$129.00- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$129.00- |       |  |  |

| TYP                  | REF-#      | OPID | REASON     | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #     |
|----------------------|------------|------|------------|----------|-----------|-------------|----------|
| RPK                  | 544-P09580 | C09  | 114X140    | 3.43     | -15,960   | \$547.43-   | 13116501 |
|                      | 544-P09727 | C09  | 100 X 500  | 3.43     | -50,000   | \$1,715.00- |          |
|                      | 544-P09795 | C09  | 109X140    | 3.43     | -15,260   | \$523.42-   |          |
|                      | 544-P09842 | C09  | 89 X 500   | 3.43     | -44,500   | \$1,526.35- |          |
|                      | 544-P09844 | C09  | CORR 09793 | 3.43     | -30,500   | \$1,046.15- |          |
| NET AMOUNT ADJUSTED: |            |      |            |          |           | \$5,358.35- |          |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 46  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM | -PACKAGE--    | UM        |           |       |
|-----------|-------------------|-----------|----------------|------|---------------|-----------|-----------|-------|
| 01125-006 | HYDROCHLORIC ACID | 22 BE     | *              | LIQ  | 001 LB BLK LB |           |           |       |
| TYP       | REF-#             | OPID      | REASON         |      | AVG-COST      | QTY-ADJST | AMT-ADJST | GL #  |
| OHD       |                   | CUI       | PRE PHYS COUNT |      | 3.61          | -15,368   | \$554.78- | 59417 |

NET AMOUNT ADJUSTED: \$554.78-

| TYP | REF-#      | OPID | REASON           |  | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #     |
|-----|------------|------|------------------|--|----------|-----------|-------------|----------|
| RPK | 544-P09472 | C09  | 11300G           |  | 3.61     | -98,300   | \$3,548.63- | 13116501 |
|     | 544-P09533 | C09  | 11300G           |  | 3.61     | -98,300   | \$3,548.63- |          |
|     | 544-P09730 | C09  | DILUTION         |  | 3.61     | -66,831   | \$2,412.60- |          |
|     | 544-P09730 | C09  | DILUTION         |  | 3.61     | -66,831   | \$2,412.60- |          |
|     | 544-P09730 | C09  | DILUTION         |  | 3.61     | -66,831   | \$2,412.60- |          |
|     | 544-P09783 | C09  | DILUTION         |  | 3.61     | -98,300   | \$3,548.63- |          |
|     | 544-P09898 | CUI  | DILUTION         |  | 3.61     | -96,601   | \$3,487.30- |          |
|     | 544-P09898 | CUI  | DILUTION         |  | 3.61     | -99,999   | \$3,609.96- |          |
|     | 544-P09931 | CUI  | FOR 10% VAR      |  | 3.61     | -1        | \$0.04-     |          |
|     | 544-P09932 | CUI  | DILUTION CORRCTN |  | 3.61     | -1        | \$0.04-     |          |

NET AMOUNT ADJUSTED: \$24,981.03-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                      | FORM | -PACKAGE--    | UM        |             |       |
|-----------|-------------------|-----------|---------------------------|------|---------------|-----------|-------------|-------|
| 01125-011 | HYDROCHLORIC ACID | 20 BE     | MCKS                      | LIQ  | 055 GL RDM EA |           |             |       |
| TYP       | REF-#             | OPID      | REASON                    |      | AVG-COST      | QTY-ADJST | AMT-ADJST   | GL #  |
| RCS       | 544-P09844        | CUI       | IPO RCT'D N ER 9844 S/B61 |      | 30.02         | -139      | \$4,172.78- | 12492 |

NET AMOUNT ADJUSTED: \$4,172.78-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM | -PACKAGE--    | UM        |           |       |
|-----------|-------------------|-----------|----------------|------|---------------|-----------|-----------|-------|
| 01125-012 | HYDROCHLORIC ACID | 20 BE     | MCKS           | LIQ  | 015 GL CBY EA |           |           |       |
| TYP       | REF-#             | OPID      | REASON         |      | AVG-COST      | QTY-ADJST | AMT-ADJST | GL #  |
| OHD       |                   | CUI       | PRE PHYS COUNT |      | 8.97          | +1        | \$8.97    | 59417 |

NET AMOUNT ADJUSTED: \$8.97

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD     | FORM | -PACKAGE--    | UM        |           |       |
|-----------|-----------|-----------|----------|------|---------------|-----------|-----------|-------|
| 01132-001 | METHANOL  |           | *        | LIQ  | 001 GL BLK LB |           |           |       |
| TYP       | REF-#     | OPID      | REASON   |      | AVG-COST      | QTY-ADJST | AMT-ADJST | GL #  |
| OHD       |           | CUI       | PHYSICAL |      | 8.64          | -8,536    | \$737.51- | 59417 |

NET AMOUNT ADJUSTED: \$737.51-

| TYP | REF-#      | OPID | REASON |  | AVG-COST | QTY-ADJST | AMT-ADJST | GL #     |
|-----|------------|------|--------|--|----------|-----------|-----------|----------|
| RPK | 544-P09546 | C09  | 450G   |  | 8.64     | -185      | \$15.98-  | 13116501 |

NET AMOUNT ADJUSTED: \$15.98-

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 47  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|
| 01132-004            | METHANOL  |           | MCKS           | LIQ      | 005 GL PL  | EA         |       |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |           | CUI       | PRE PHYS COUNT | 7.37     | -2         | \$14.74-   | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$14.74-   |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01143-002            | SODIUM GLUCONATE |           | *              | FINE     | 050 LB BAG | EA         |       |  |
| TYP                  | REF-#            | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                  | CUI       | PRE PHYS COUNT | 28.59    | -11        | \$314.49-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |                |          |            | \$314.49-  |       |  |

| TYP                  | REF-#      | OPID | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
|----------------------|------------|------|------------------------|----------|------------|-------------|----------|--|
| RPK                  | 544-P09609 | C09  | 4000G BLEND            | 28.59    | -16        | \$457.44-   | 13116501 |  |
|                      | 544-P09642 | C09  | 40000#                 | 28.59    | -7         | \$200.13-   |          |  |
|                      | 544-P09643 | C09  | 3500G                  | 28.59    | -22        | \$628.98-   |          |  |
|                      | 544-P09658 | C09  | BUSCH IND W15425       | 28.59    | -20        | \$571.80-   |          |  |
|                      | 544-P09794 | C09  | INTL EXTRUSION BLEND   | 28.59    | -16        | \$457.44-   |          |  |
|                      | 544-P09869 | CUI  | CHELACLEAN-M.C. W15703 | 28.59    | -7         | \$200.13-   |          |  |
| NET AMOUNT ADJUSTED: |            |      |                        |          |            | \$2,515.92- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01154-007            | SODIUM SULFATE ANHYDROUS |           | MCKS           | GRAN     | 100 LB BAG | EA         |       |  |
| TYP                  | REF-#                    | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                          | CUI       | PRE PHYS COUNT | 7.44     | -24        | \$178.56-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                          |           |                |          |            | \$178.56-  |       |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD       | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------------------|-----------|------------|----------|------------|--------------|----------|--|
| 01154-010            | SODIUM SULFATE ANHYDROUS | ANHYD     | *          | GRAN     | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#                    | OPID      | REASON     | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09297               | C09       | 1868 X 100 | 6.03     | -95,080    | \$5,733.32-  | 13116501 |  |
|                      | 544-P09442               | C09       | 2000X100   | 6.03     | -98,910    | \$5,964.27-  |          |  |
|                      | 544-P09442               | C09       | 2000X100   | 6.03     | -98,910    | \$5,964.27-  |          |  |
|                      | 544-P09486               | C09       | KMCX185    | 6.03     | -97,960    | \$5,906.99-  |          |  |
|                      | 544-P09486               | C09       | KMCX185    | 6.03     | -97,960    | \$5,906.99-  |          |  |
|                      | 544-P09612               | C09       | 1994 X 100 | 6.03     | -97,820    | \$5,898.55-  |          |  |
|                      | 544-P09612               | C09       | 1994 X 100 | 6.03     | -97,820    | \$5,898.55-  |          |  |
| NET AMOUNT ADJUSTED: |                          |           |            |          |            | \$41,272.94- |          |  |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 48  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|--------------------------|-----------|----------|----------|------------|-----------|-------|--|
| 01154-011            | SODIUM SULFATE ANHYDROUS |           | MCKS     | GRAN     | 050 LB BAG | EA        |       |  |
| TYP                  | REF-#                    | OPID      | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH0                  |                          | CUI       | PHYSICAL | 3.73     | +98        | \$365.54  | 59417 |  |
| NET AMOUNT ADJUSTED: |                          |           |          |          |            | \$365.54  |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|--|
| 01158-027            | SODIUM SILICATE | N         | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09545      | C09       | 72X635 | 6.23     | -46,020    | \$2,867.05- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$2,867.05- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|--------------------------|-----------|---------|----------|------------|-----------|-------|--|
| 01159-032            | SODIUM SULFITE ANHYDROUS | PHOTO     | *       | CRYS     | 050 LB BAG | EA        |       |  |
| TYP                  | REF-#                    | OPID      | REASON  | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| INT                  |                          | CUI       | LAB USE | 14.98    | -1         | \$14.98-  | 73550 |  |
| NET AMOUNT ADJUSTED: |                          |           |         |          |            | \$14.98-  |       |  |

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|---------------------|-----------|--------|----------|------------|-------------|----------|--|
| 01162-001            | METHYL ETHYL KETONE |           | *      | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#               | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09393          | C09       | 20X381 | 30.51    | -4,429     | \$1,351.29- | 13116501 |  |
|                      | 544-P09579          | C09       | 75X366 | 30.51    | -27,999    | \$8,542.49- |          |  |
| NET AMOUNT ADJUSTED: |                     |           |        |          |            | \$9,893.78- |          |  |

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD           | FORM     | -PACKAGE--  | UM        |       |  |
|----------------------|---------------------|-----------|----------------|----------|-------------|-----------|-------|--|
| 01162-003            | METHYL ETHYL KETONE |           | MCKS           | LIQ      | 055 GL DRUM | EA        |       |  |
| TYP                  | REF-#               | OPID      | REASON         | AVG-COST | QTY-ADJST   | AMT-ADJST | GL #  |  |
| OH0                  |                     | CUI       | PRE PHYS COUNT | 129.98   | -1          | \$129.98- | 59417 |  |
| NET AMOUNT ADJUSTED: |                     |           |                |          |             | \$129.98- |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|------------|--------|----------|------------|-------------|----------|--|
| 01170-003            | MONOETHANOLAMINE | LOW FREEZE | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#            | OPID       | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09603       | C09        | 20X460 | 29.22    | -8,720     | \$2,547.98- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |            |        |          |            | \$2,547.98- |          |  |

MCK0062141

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 49  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|--------|----------|------------|-------------|----------|--|
| 01170-006            | MONOETHANOLAMINE |           | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09602       | C09       | 28X460 | 33.30    | -12,760    | \$4,249.08- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |            | \$4,249.08- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------|--|
| 01172-001            | PHOSPHORIC ACID | 75%       | *              | LIQ      | 001 GL BLK | LB         |       |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                 | CUI       | PRE PHYS COUNT | 26.67    | +3,464     | \$923.85   | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$923.85   |       |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
|----------------------|------------|------|--------|----------|------------|--------------|----------|--|
| RPK                  | 544-P09606 | C09  | 40X200 | 26.67    | -8,000     | \$2,133.60-  | 13116501 |  |
|                      | 544-P09607 | C09  | 50X700 | 26.67    | -35,000    | \$9,334.50-  |          |  |
|                      | 544-P09742 | C09  | 51X700 | 26.67    | -35,700    | \$9,521.19-  |          |  |
|                      | 544-P09891 | C09  | 40X200 | 26.67    | -8,000     | \$2,133.60-  |          |  |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$23,122.89- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-----------------|-----------|----------------|----------|------------|-------------|-------|--|
| 01172-046            | PHOSPHORIC ACID | 75%       | MCKS           | LIQ      | 055 GL RDM | EA          |       |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OH0                  |                 | CUI       | PRE PHYS COUNT | 204.37   | +1         | \$204.37    | 59417 |  |
|                      |                 | CUI       | PHYSICAL       | 204.37   | -9         | \$1,839.33- |       |  |
|                      |                 | CUI       | PRE PHYS COUNT | 204.37   | +5         | \$1,021.85  |       |  |
|                      |                 | CUI       | PHYSICAL       | 204.37   | -6         | \$1,226.22- |       |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$1,839.33- |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------|--|
| 01172-047            | PHOSPHORIC ACID | 85%       | MCKS           | LIQ      | 055 GL RDM | EA         |       |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                 | CUI       | PRE PHYS COUNT | 234.51   | -1         | \$234.51-  | 59417 |  |
|                      |                 | CUI       | PHYSICAL       | 234.51   | +7         | \$1,641.57 |       |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$1,407.06 |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------|--|
| 01172-049            | PHOSPHORIC ACID | 85%       | MCKS           | LIQ      | 015 GL CBY | EA         |       |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                 | CUI       | PRE PHYS COUNT | 67.37    | -6         | \$404.22-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$404.22-  |       |  |

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PGM: CK02L2IP VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 50  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|----------------|-----------|-----------------------|----------|------------|------------|-------|--|
| 01174-014            | SODIUM NITRITE | FREE FLOW | *                     | GRAN     | 100 LB BAG | EA         |       |  |
| TYP                  | REF-#          | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                | CUI       | NOT DRWN DOWN ON 9615 | 41.50    | -14        | \$581.00-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                |           |                       |          |            | \$581.00-  |       |  |

| PROD-CD              | PROD-NAME      | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM           |       |  |
|----------------------|----------------|-----------|--------------------------|----------|------------|--------------|-------|--|
| 01174-026            | SODIUM NITRITE | SUPER FF  | FCC                      | CRYS     | 100 LB BAG | EA           |       |  |
| TYP                  | REF-#          | OPID      | REASON                   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |
| OHD                  |                | CUI       | NOT DRWN DWN ON IPO9615  | 39.58    | -167       | \$6,609.86-  | 59417 |  |
|                      |                | CUI       | NOT DRWN DWN ON IPO 9682 | 39.58    | -182       | \$7,203.56-  |       |  |
|                      |                | CUI       | PRE PHYS COUNT           | 39.58    | -3         | \$118.74-    |       |  |
|                      |                | CUI       | NO DRW DWN ON IPO 9104   | 39.58    | -186       | \$7,361.88-  |       |  |
| NET AMOUNT ADJUSTED: |                |           |                          |          |            | \$21,294.04- |       |  |

| TYP                  | REF-#      | OPID | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|--------------------|----------|------------|--------------|----------|
| RPK                  | 544-P09525 | C09  | 4200G BLEND        | 39.58    | -182       | \$7,203.56-  | 13116501 |
|                      | 544-P09817 | C09  | NL TREATING W15608 | 39.58    | -182       | \$7,203.56-  |          |
|                      | 544-P09864 | C09  | NL TREATING        | 39.58    | -182       | \$7,203.56-  |          |
| NET AMOUNT ADJUSTED: |            |      |                    |          |            | \$21,610.68- |          |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|----------------------|-----------|---------|----------|------------|-------------|----------|--|
| 01187-001            | GLYCOL ETHER ACETATE | EE        | *       | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#                | OPID      | REASON  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09889           | C09       | 8 X 425 | 49.81    | -3,840     | \$1,912.70- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                      |           |         |          |            | \$1,912.70- |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-------------|-----------|----------------|----------|------------|------------|-------|--|
| 01189-001            | NITRIC ACID | 42 BE     | *              | LIQ      | 001 GL BLK | LB         |       |  |
| TYP                  | REF-#       | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |             | CUI       | PRE PHYS COUNT | 8.84     | -11,249    | \$994.41-  | 59417 |  |
| NET AMOUNT ADJUSTED: |             |           |                |          |            | \$994.41-  |       |  |

| TYP                  | REF-#      | OPID | REASON  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|----------------------|------------|------|---------|----------|------------|-------------|----------|
| RPK                  | 544-P09524 | C09  | 7 X 170 | 8.84     | -1,190     | \$105.20-   | 13116501 |
|                      | 544-P09697 | C09  | 20 X 95 | 8.84     | -1,900     | \$167.96-   |          |
|                      | 544-P09699 | C09  | 59X170  | 8.84     | -10,030    | \$886.65-   |          |
|                      | 544-P09700 | C09  | 50X600  | 8.84     | -30,000    | \$2,652.00- |          |
| NET AMOUNT ADJUSTED: |            |      |         |          |            | \$3,811.81- |          |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 51  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM         |            |       |  |
|-----------|-------------|-----------|----------------|------|------------|------------|------------|-------|--|
| 01189-004 | NITRIC ACID | 38 BE     | *              | LIQ  | 001 LB BLK | LB         |            |       |  |
| TYP       | REF-#       | OPID      | REASON         |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0       |             | CUI       | PRE PHYS COUNT |      | 6.63       | -1,376     | \$91.23-   | 59417 |  |

NET AMOUNT ADJUSTED: \$91.23-

|     |            |      |        |  |          |            |            |          |  |
|-----|------------|------|--------|--|----------|------------|------------|----------|--|
| TYP | REF-#      | OPID | REASON |  | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK | 544-P09701 | C09  | 76X90  |  | 6.63     | -6,840     | \$453.49-  | 13116501 |  |

NET AMOUNT ADJUSTED: \$453.49-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM         |            |       |  |
|-----------|-------------|-----------|----------------|------|------------|------------|------------|-------|--|
| 01189-009 | NITRIC ACID | 42 BE     | MCKS           | LIQ  | 055 GL RDM | EA         |            |       |  |
| TYP       | REF-#       | OPID      | REASON         |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0       |             | CUI       | PRE PHYS COUNT |      | 68.58      | +55        | \$3,771.90 | 59417 |  |

NET AMOUNT ADJUSTED: \$3,771.90

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM         |             |       |  |
|-----------|-------------|-----------|----------------|------|------------|------------|-------------|-------|--|
| 01189-010 | NITRIC ACID | 42 BE     | MCKS           | LIQ  | 015 GL RDM | EA         |             |       |  |
| TYP       | REF-#       | OPID      | REASON         |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OH0       |             | CUI       | PRE PHYS COUNT |      | 19.93      | -57        | \$1,136.01- | 59417 |  |

NET AMOUNT ADJUSTED: \$1,136.01-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM         |            |       |  |
|-----------|-------------|-----------|----------------|------|------------|------------|------------|-------|--|
| 01189-011 | NITRIC ACID | 42 BE     | MCKS           | LIQ  | 008 GL RDM | EA         |            |       |  |
| TYP       | REF-#       | OPID      | REASON         |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0       |             | CUI       | PHYSICAL       |      | 11.39      | +27        | \$307.53   | 59417 |  |
|           |             | CUI       | PRE PHYS COUNT |      | 11.39      | +5         | \$56.95    |       |  |

NET AMOUNT ADJUSTED: \$364.48

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM         |            |       |  |
|-----------|-------------|-----------|----------------|------|------------|------------|------------|-------|--|
| 01189-012 | NITRIC ACID | 38 BE     | MCKS           | LIQ  | 055 GL RDM | EA         |            |       |  |
| TYP       | REF-#       | OPID      | REASON         |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0       |             | CUI       | PRE PHYS COUNT |      | 55.06      | +5         | \$275.30   | 59417 |  |

NET AMOUNT ADJUSTED: \$275.30

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM         |            |       |  |
|-----------|-------------|-----------|----------------|------|------------|------------|------------|-------|--|
| 01189-013 | NITRIC ACID | 38 BE     | MCKS           | LIQ  | 008 GL RDM | EA         |            |       |  |
| TYP       | REF-#       | OPID      | REASON         |      | AVG-COST   | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0       |             | CUI       | PRE PHYS COUNT |      | 8.86       | -4         | \$35.44-   | 59417 |  |

NET AMOUNT ADJUSTED: \$35.44-

MCK0062144

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 52  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD              | FORM | -PACKAGE--           | UM         |             |          |  |
|-----------|-------------------|-----------|-------------------|------|----------------------|------------|-------------|----------|--|
| 01212-004 | PERCHLOROETHYLENE | SVG       | *                 | LIQ  | 001 GL BLK           | LB         |             |          |  |
| TYP       | REF-#             | OPID      | REASON            |      | AVG-COST             | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| OHD       |                   | CUI       | PHYSICAL          |      | 27.59                | -380       | \$104.84-   | 59417    |  |
|           |                   | CUI       | FROM IND.-C NOTES |      | 27.59                | +52,750    | \$14,553.73 |          |  |
|           |                   | CUI       | MTL LOSS-PHYSICAL |      | 27.59                | -6,490     | \$1,790.59- |          |  |
|           |                   |           |                   |      | NET AMOUNT ADJUSTED: |            | \$12,658.30 |          |  |
| TYP       | REF-#             | OPID      | REASON            |      | AVG-COST             | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P09600        | C09       | 30X700            |      | 27.59                | -21,420    | \$5,909.78- | 13116501 |  |
|           |                   |           |                   |      | NET AMOUNT ADJUSTED: |            | \$5,909.78- |          |  |

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD             | FORM | -PACKAGE--           | UM         |              |          |  |
|-----------|-------------------|-----------|------------------|------|----------------------|------------|--------------|----------|--|
| 01212-005 | PERCHLOROETHYLENE |           | *                | LIQ  | 001 LB BLK           | LB         |              |          |  |
| TYP       | REF-#             | OPID      | REASON           |      | AVG-COST             | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| OHD       |                   | CUI       | PRE PHYS COUNT   |      | 27.03                | +5,168     | \$1,396.91   | 59417    |  |
|           |                   | CUI       | TANK MTY-C NOTES |      | 27.03                | -1,105     | \$298.68-    |          |  |
|           |                   | CUI       | TO SVG-C NOTES   |      | 27.03                | -52,750    | \$14,258.33- |          |  |
|           |                   |           |                  |      | NET AMOUNT ADJUSTED: |            | \$13,160.10- |          |  |
| TYP       | REF-#             | OPID      | REASON           |      | AVG-COST             | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK       | 544-P09641        | C09       | 27X700           |      | 27.03                | -19,278    | \$5,210.84-  | 13116501 |  |
|           |                   |           |                  |      | NET AMOUNT ADJUSTED: |            | \$5,210.84-  |          |  |

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM | -PACKAGE--           | UM         |             |       |  |
|-----------|-------------------|-----------|----------------|------|----------------------|------------|-------------|-------|--|
| 01212-010 | PERCHLOROETHYLENE |           | MCKS           | LIQ  | 055 GL DRM           | EA         |             |       |  |
| TYP       | REF-#             | OPID      | REASON         |      | AVG-COST             | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD       |                   | CUI       | PHYSICAL       |      | 218.11               | -10        | \$2,181.10- | 59417 |  |
|           |                   | CUI       | PRE PHYS COUNT |      | 218.11               | +8         | \$1,744.88  |       |  |
|           |                   |           |                |      | NET AMOUNT ADJUSTED: |            | \$436.22-   |       |  |

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD    | FORM | -PACKAGE--           | UM         |             |          |  |
|-----------|-------------------|-----------|---------|------|----------------------|------------|-------------|----------|--|
| 01223-001 | DIETHYLENE GLYCOL |           | *       | LIQ  | 001 GL BLK           | LB         |             |          |  |
| TYP       | REF-#             | OPID      | REASON  |      | AVG-COST             | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P09503        | C09       | 61X520  |      | 23.05                | -32,354    | \$7,457.60- | 13116501 |  |
|           | 544-P09618        | C09       | 3X520   |      | 23.05                | -3         | \$0.69-     |          |  |
|           | 544-P09746        | C09       | 4 X 520 |      | 23.05                | -2,700     | \$622.35-   |          |  |
|           |                   |           |         |      | NET AMOUNT ADJUSTED: |            | \$8,080.64- |          |  |

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PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 53  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------|--|
| 01224-002            | HEXYLENE GLYCOL |           |                | LIQ      | 055 GL DRM | EA         |       |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                 | CUI       | PRE PHYS COUNT | 272.48   | -1         | \$272.48-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$272.48-  |       |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------|--|
| 01225-001            | ETHYLENE GLYCOL |           | *              | LIQ      | 001 GL BLK | LB         |       |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                 | CUI       | PRE PHYS COUNT | 22.24    | +5,944     | \$1,321.95 | 59417 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$1,321.95 |       |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------------|-----------|--------|----------|------------|--------------|----------|--|
| 01226-004            | DIPROPYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09654         | C09       | 26X474 | 42.38    | -12,820    | \$5,433.12-  | 13116501 |  |
|                      | 544-P09854         | C09       | 53X474 | 42.38    | -25,540    | \$10,823.85- |          |  |
| NET AMOUNT ADJUSTED: |                    |           |        |          |            | \$16,256.97- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER  | GRAD          | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------------|------------|---------------|----------|------------|-------------|----------|--|
| 01228-003            | FORMALDEHYDE SOLUTION | 37% 12-15M | *             | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#                 | OPID       | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09790            | CUI        | CHEMCUT BLEND | 10.93    | -30,900    | \$3,377.37- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                       |            |               |          |            | \$3,377.37- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------------|-----------|---------|----------|------------|--------------|----------|--|
| 01229-003            | METHYLENE CHLORIDE |           | *       | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#              | OPID      | REASON  | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09546         | C09       | 450G    | 28.24    | -3,340     | \$943.22-    | 13116501 |  |
|                      | 544-P09656         | C09       | 100X600 | 28.24    | -61,200    | \$17,282.88- |          |  |
|                      | 544-P09779         | C09       | 150X600 | 28.24    | -91,800    | \$25,924.32- |          |  |
|                      | 544-P09897         | C09       | 50X600  | 28.24    | -30,600    | \$8,641.44-  |          |  |
| NET AMOUNT ADJUSTED: |                    |           |         |          |            | \$52,791.86- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01229-021            | METHYLENE CHLORIDE |           | MCKS           | LIQ      | 055 GL DRM | EA         |       |  |
| TYP                  | REF-#              | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                    | CUI       | PRE PHYS COUNT | 193.24   | -1         | \$193.24-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                    |           |                |          |            | \$193.24-  |       |  |

MCK0062146

PGM: CK02L21P VER 01.4

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 54

DATE: 02/04/85 TIME: 13:32:21

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01230-023            | FORMALDEHYDE SOLUTION | 27% 8M    | MCKS           | LIQ      | 485 LB     | DRM EA     |       |  |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                       | CUI       | PRE PHYS COUNT | 64.29    | -1         | \$64.29-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$64.29-   |       |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01233-001            | XYLENE    |           | *              | LIQ      | 001 GL     | BLK LB     |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | PRE PHYS COUNT | 20.66    | +1,224     | \$252.88   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$252.88   |       |  |  |

| TYP                  | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
|----------------------|------------|------|--------|----------|------------|------------|----------|
| RPK                  | 544-P09546 | C09  | 450G   | 20.66    | -435       | \$89.87-   | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |        |          |            | \$89.87-   |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|------------|-----------|------------------|----------|------------|-------------|----------|--|--|
| 01236-002            | TOLUENE    |           | *                | LIQ      | 001 GL     | BLK LB      |          |  |  |
| TYP                  | REF-#      | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| OHD                  |            | CUI       | PHYSICAL         | 19.24    | -1,216     | \$233.96-   | 59417    |  |  |
|                      |            | CUI       | PRE PHYS COUNT   | 19.24    | -9,687     | \$1,863.78- |          |  |  |
| NET AMOUNT ADJUSTED: |            |           |                  |          |            | \$2,097.74- |          |  |  |
| TYP                  | REF-#      | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09393 | C09       | 20X381           | 19.24    | -3,191     | \$613.95-   | 13116501 |  |  |
|                      | 544-P09546 | C09       | 450G             | 19.24    | -435       | \$83.69-    |          |  |  |
|                      | 544-P09888 | CUI       | WHITTAKER W15768 | 19.24    | -834       | \$160.46-   |          |  |  |
| NET AMOUNT ADJUSTED: |            |           |                  |          |            | \$858.10-   |          |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01236-004            | TOLUENE   |           | MCKS           | LIQ      | 054 GL     | DRM EA     |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |           | CUI       | PRE PHYS COUNT | 95.90    | -5         | \$479.50-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$479.50-  |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-------------------|-----------|----------------|----------|------------|-------------|-------|--|--|
| 01238-001            | ISOPROPYL ALCOHOL | 99%       | *              | LIQ      | 001 LB     | BLK LB      |       |  |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHD                  |                   | CUI       | PRE PHYS COUNT | 25.07    | -25,837    | \$6,477.34- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$6,477.34- |       |  |  |

MCK0062147

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 55  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| TYP | REF-#      | OPID | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|-----|------------|------|-----------|----------|------------|--------------|----------|
| RPK | 544-P09558 | C09  | 150X355   | 25.07    | -54,315    | \$13,616.77- | 13116501 |
|     | 544-P09724 | C09  | 150X355   | 25.07    | -54,315    | \$13,616.77- |          |
|     | 544-P09910 | CUI  | 201 X 355 | 25.07    | -72,782    | \$18,246.45- |          |

NET AMOUNT ADJUSTED: \$45,479.99-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM        | AMT-ADJUST | GL # |
|-----------|-------------------|-----------|------------------|----------|------------|-----------|------------|------|
| 01238-005 | ISOPROPYL ALCOHOL | 99%       | MCKS             | LIQ      | 054 GL     | DRM EA    |            |      |
| TYP       | REF-#             | OPID      | REASON           | AVG-COST | QTY-ADJUST |           |            |      |
| OHD       |                   | CUI       | SHIPP'D-PHYSICAL | 105.38   | +9         | \$948.42  | 59417      |      |
|           |                   | CUI       | PRE PHYS COUNT   | 105.38   | -6         | \$632.28- |            |      |

NET AMOUNT ADJUSTED: \$316.14

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM       | AMT-ADJUST | GL # |
|-----------|-------------------|-----------|----------------|----------|------------|----------|------------|------|
| 01238-007 | ISOPROPYL ALCOHOL | 99%       | MCKS           | LIQ      | 005 GL     | PL EA    |            |      |
| TYP       | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST |          |            |      |
| OHD       |                   | CUI       | PRE PHYS COUNT | 13.06    | -5         | \$65.30- | 59417      |      |

NET AMOUNT ADJUSTED: \$65.30-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM       | AMT-ADJUST | GL # |
|-----------|-------------------|-----------|----------------|----------|------------|----------|------------|------|
| 01240-018 | TRICHLOROETHYLENE |           | MCKS           | LIQ      | 054 GL     | DRM EA   |            |      |
| TYP       | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST |          |            |      |
| OHD       |                   | CUI       | PRE PHYS COUNT | 265.17   | +1         | \$265.17 | 59417      |      |

NET AMOUNT ADJUSTED: \$265.17

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           | AMT-ADJUST | GL # |
|-----------|------------|-----------|--------|----------|------------|--------------|------------|------|
| 01241-003 | MORPHOLINE |           | *      | LIQ      | 001 GL     | BLK LB       |            |      |
| TYP       | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST |              |            |      |
| RPK       | 544-P09621 | C09       | 71X460 | 86.95    | -32,780    | \$28,502.21- | 13116501   |      |

NET AMOUNT ADJUSTED: \$28,502.21-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           | AMT-ADJUST | GL # |
|-----------|-------------|-----------|----------|----------|------------|--------------|------------|------|
| 01242-003 | FORMIC ACID | 90%       | *        | LIQ      | 001 GL     | BLK LB       |            |      |
| TYP       | REF-#       | OPID      | REASON   | AVG-COST | QTY-ADJUST |              |            |      |
| RPK       | 544-P09774  | C09       | 76 X 533 | 38.39    | -40,760    | \$15,647.76- | 13116501   |      |

NET AMOUNT ADJUSTED: \$15,647.76-

MCK0062148

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 56  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|--|
| 01245-011            | TRIETHANOLAMINE | 85%       | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09575      | C09       | 36X510 | 36.78    | -18,020    | \$6,627.76- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$6,627.76- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM           |       |  |
|----------------------|-----------|-----------|-------------------|----------|------------|--------------|-------|--|
| 01252-003            | CALSOFT   | LAS-99    | MCKS              | LIQ      | 055 GL RDM | EA           |       |  |
| TYP                  | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #  |  |
| OHD                  |           | CUI       | RCD INTO WRNG SKU | 255.42   | -54        | \$13,792.68- | 59417 |  |
|                      |           | CUI       | REVSE PREV. CRCTN | 255.42   | +54        | \$13,792.68  |       |  |
| NET AMOUNT ADJUSTED: |           |           |                   |          |            | \$0.00       |       |  |

| TYP                  | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|-----------------|----------|------------|--------------|----------|
| RPK                  | 544-P09702 | CUI  | TRNSFR TO DOBSA | 239.52   | -54        | \$12,934.08- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |                 |          |            | \$12,934.08- |          |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|--------------------|-----------|--------|----------|------------|-------------|----------|--|
| 01255-001            | TRIETHYLENE GLYCOL |           | *      | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09601         | C09       | 19X520 | 31.70    | -9,780     | \$3,100.26- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                    |           |        |          |            | \$3,100.26- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------------|-----------|----------------|----------|------------|------------|-------|--|
| 01255-006            | TRIETHYLENE GLYCOL |           | MCKS           | LIQ      | 055 GL DRM | EA         |       |  |
| TYP                  | REF-#              | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                    | CUI       | PHYSICAL       | 177.37   | +1         | \$177.37   | 59417 |  |
|                      |                    | CUI       | PRE PHYS COUNT | 177.37   | +1         | \$177.37   |       |  |
| NET AMOUNT ADJUSTED: |                    |           |                |          |            | \$354.74   |       |  |

| PROD-CD              | PROD-NAME             | QUALIFIER  | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------------|------------|--------|----------|------------|-------------|----------|--|
| 01260-003            | 1,1,1 TRICHLOROETHANE | AEROTHN TT | MSS    | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#                 | OPID       | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09655            | C09        | 19X592 | 39.29    | -11,900    | \$4,675.51- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                       |            |        |          |            | \$4,675.51- |          |  |

MCK00062149

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 57  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|-----------------------|-----------|----------------|----------|------------|--------------|----------|--|--|
| 01260-009            | 1,1,1 TRICHLOROETHANE | CHLORO SM | MSS            | LIQ      | 001 GL BLK | LB           |          |  |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| OHD                  |                       | CUI       | PHYSICAL       | 38.18    | -2,381     | \$909.07-    | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$909.07-    |          |  |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P09789            | C09       | 100X592        | 38.18    | -60,384    | \$23,054.61- | 13116501 |  |  |
|                      | 544-P09899            | CUG       | FROM SM TO VDG | 38.18    | -18,910    | \$7,219.84-  |          |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$30,274.45- |          |  |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|-----------------------|-----------|------------------|----------|------------|--------------|----------|--|--|
| 01260-022            | 1,1,1 TRICHLOROETHANE | VDG       | *                | LIQ      | 001 GL BLK | LB           |          |  |  |
| TYP                  | REF-#                 | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P09753            | C09       | 50X592           | 38.17    | -30,192    | \$11,524.29- | 13116501 |  |  |
|                      | 544-P09766            | CUI       | TRNSFR TO SM SKU | 38.17    | -41,489    | \$15,836.35- |          |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                  |          |            | \$27,360.64- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|-----------------|-----------|--------|----------|------------|-------------|----------|--|--|
| 01265-001            | STYRENE MONOMER |           | *      | LIQ      | 001 GL BLK | LB          |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09531      | C09       | 37X410 | 32.85    | -15,440    | \$5,072.04- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |            | \$5,072.04- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01265-002            | STYRENE MONOMER |           | MCKS           | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |                 | CUI       | PRE PHYS COUNT | 153.80   | +1         | \$153.80   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$153.80   |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|------------|-----------|----------|----------|------------|-------------|----------|--|--|
| 01281-005            | NEODOL     | 25-7      | *        | LIQ      | 001 LB BLK | LB          |          |  |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09820 | C09       | 23 X 440 | 47.26    | -8,320     | \$3,932.03- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |            | \$3,932.03- |          |  |  |

MCK0062150

PGM: CK02L21P VER 01.4

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 58

DATE: 02/04/85 TIME: 13:32:21

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------|-----------|--------|----------|---------------|-------------|----------|--|
| 01281-009            | NEODOL     | 25-3      | *      | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09876 | C09       | 19X410 | 52.32    | -7,830        | \$4,096.66- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |               | \$4,096.66- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                      | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|--------------|-----------|---------------------------|----------|---------------|--------------|----------|--|
| 01282-020            | CAUSTIC SODA |           | *                         | BEAD     | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#        | OPID      | REASON                    | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09431   | C09       | 80X500                    | 17.50    | -40,000       | \$7,000.00-  | 13116501 |  |
|                      | 544-P09452   | C09       | 80X500                    | 17.50    | -40,000       | \$7,000.00-  |          |  |
|                      | 544-P09482   | C09       | VMC#51351/CORAL CHEM 80DR | 17.50    | -40,000       | \$7,000.00-  |          |  |
|                      | 544-P09483   | C09       | 84X500                    | 17.50    | -42,000       | \$7,350.00-  |          |  |
|                      | 544-P09599   | CUI       | FLOKEM                    | 17.50    | -40,000       | \$7,000.00-  |          |  |
|                      | 544-P09703   | C09       | W15493/FAR BEST           | 17.50    | -30,000       | \$5,250.00-  |          |  |
|                      | 544-P09723   | C09       | 6 FLOBYNS/GR JCT          | 17.50    | -18,000       | \$3,150.00-  |          |  |
|                      | 544-P09770   | C09       | 160 X 500                 | 17.50    | -80,000       | \$14,000.00- |          |  |
|                      | 544-P09822   | C09       | FAR BEST W15647           | 17.50    | -30,000       | \$5,250.00-  |          |  |
|                      | 544-P09921   | C09       | 80X500/FLOKEM/VMC51354    | 17.50    | -40,000       | \$7,000.00-  |          |  |
| NET AMOUNT ADJUSTED: |              |           |                           |          |               | \$70,000.00- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|--------------|-----------|----------|----------|---------------|-------------|-------|--|
| 01282-037            | CAUSTIC SODA |           | MCKS     | BEAD     | 500 LB DRM EA |             |       |  |
| TYP                  | REF-#        | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OH0                  |              | CUI       | PHYSICAL | 105.92   | -17           | \$1,800.64- | 59417 |  |
| NET AMOUNT ADJUSTED: |              |           |          |          |               | \$1,800.64- |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|--------------|-----------|----------|----------|---------------|------------|-------|--|
| 01282-038            | CAUSTIC SODA |           | CUST     | BEAD     | 500 LB DRM EA |            |       |  |
| TYP                  | REF-#        | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH0                  |              | CUI       | PHYSICAL | 94.13    | -6            | \$564.78-  | 59417 |  |
| NET AMOUNT ADJUSTED: |              |           |          |          |               | \$564.78-  |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|--------------|-----------|-----------------------|----------|---------------|------------|-------|--|
| 01282-039            | CAUSTIC SODA |           | MCKS                  | BEAD     | 001 EA PTK EA |            |       |  |
| TYP                  | REF-#        | OPID      | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH0                  |              | CUI       | RCD ON WRND P.C.P9723 | 558.47   | +6            | \$3,350.82 | 59417 |  |
| NET AMOUNT ADJUSTED: |              |           |                       |          |               | \$3,350.82 |       |  |

MCK0062151

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 59  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|--------------|-----------|---------------------|----------|------------|-------------|-------|--|
| 01282-040            | CAUSTIC SODA |           | CUST                | BEAD     | 001 EA     | PTK EA      |       |  |
| TYP                  | REF-#        | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OH0                  |              | CUI       | S/B 01282039-P09723 | 550.22   | -6         | \$3,301.32- | 59417 |  |
| NET AMOUNT ADJUSTED: |              |           |                     |          |            | \$3,301.32- |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01282-051            | CAUSTIC SODA | CONSIGNED | *                 | BEAD     | 001 LB     | BLK LB     |       |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P08878   | C09       | VMC#73155         | 0.01     | -46,420    | \$4.64-    | 12492 |  |
|                      | 544-P08879   | CUI       | VMC 51351-MCK USE | 0.01     | -40,000    | \$4.00-    |       |  |
|                      | 544-P08879   | CUI       | VMC 51354-MCK USE | 0.01     | -40,000    | \$4.00-    |       |  |
|                      | 544-P08879   | C09       | VMC#51353         | 0.01     | -48,110    | \$4.81-    |       |  |
|                      | 544-P08879   | C09       | VMC#51358         | 0.01     | -44,440    | \$4.44-    |       |  |
|                      | 544-P08879   | C09       | VMC#51357         | 0.01     | -45,720    | \$4.57-    |       |  |
|                      | 544-P09709   | CUI       | VMC 51361-MCK USE | 0.01     | -30,500    | \$3.05-    |       |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |            | \$29.51-   |       |  |

| TYP                  | REF-#      | OPID | REASON               | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
|----------------------|------------|------|----------------------|----------|------------|------------|----------|--|
| RPK                  | 544-P09339 | C09  | VMC#73152            | 0.01     | -22,000    | \$2.20-    | 13116501 |  |
|                      | 544-P09353 | C09  | VMC#73153            | 0.01     | -40,000    | \$4.00-    |          |  |
|                      | 544-P09363 | C09  | VMC#73154            | 0.01     | -45,000    | \$4.50-    |          |  |
|                      | 544-P09592 | C09  | VMC#51352            | 0.01     | -40,000    | \$4.00-    |          |  |
|                      | 544-P09707 | C09  | VMC#51356/I.C.P.WEST | 0.01     | -40,000    | \$4.00-    |          |  |
|                      | 544-P09849 | C09  | VMC#51355 RSR        | 0.01     | -34,000    | \$3.40-    |          |  |
| NET AMOUNT ADJUSTED: |            |      |                      |          |            | \$22.10-   |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01282-052            | CAUSTIC SODA | CONSIGNED | MCKS              | BEAD     | 500 LB     | DRM EA     |       |  |
| TYP                  | REF-#        | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P09021   | C09       | VMC#51356         | 0.05     | -80        | \$4.00-    | 12492 |  |
|                      | 544-P09021   | C09       | VMC#51352         | 0.05     | -80        | \$4.00-    |       |  |
|                      | 544-P09592   | CUI       | VMC 73153-MCK USE | 0.05     | -80        | \$4.00-    |       |  |
|                      | 544-P09707   | C09       | VMC#51355         | 0.05     | -68        | \$3.40-    |       |  |
| NET AMOUNT ADJUSTED: |              |           |                   |          |            | \$15.40-   |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|-----------|----------|------------|------------|-------|--|
| 01282-053            | CAUSTIC SODA | CONSIGNED | CUST      | BEAD     | 001 EA     | PTK EA     |       |  |
| TYP                  | REF-#        | OPID      | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P08798   | C09       | VMC#73154 | 0.68     | -15        | \$10.20-   | 12492 |  |
|                      | 544-P09085   | C09       | VMC#73156 | 0.68     | -15        | \$10.20-   |       |  |
| NET AMOUNT ADJUSTED: |              |           |           |          |            | \$20.40-   |       |  |

MCK0062152

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         | GL #  |
|----------------------|--------------|-----------|--------------------|----------|------------|------------|-------|
| 01336-003            | TRITON X-100 |           | MCKS               | LIQ      | 055 GL DRM | EA         |       |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST |       |
| OH0                  |              | CUI       | PRE-PHYS INVENTORY | 311.14   | +6         | \$1,866.84 | 59417 |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$1,866.84 |       |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          | GL #  |
|----------------------|--------------|-----------|----------------|----------|------------|-------------|-------|
| 01336-011            | TRITON X-100 |           | MCKS           | LIQ      | 055 GL NDM | EA          |       |
| TYP                  | REF-#        | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  |       |
| OH0                  |              | CUI       | PRE PHYS COUNT | 321.59   | -7         | \$2,251.13- | 59417 |
| NET AMOUNT ADJUSTED: |              |           |                |          |            | \$2,251.13- |       |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         | GL #  |
|----------------------|---------------|-----------|----------------|----------|------------|------------|-------|
| 01361-002            | SULFURIC ACID | 96%       | *              | LIQ      | 001 LB BLK | LB         |       |
| TYP                  | REF-#         | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST |       |
| OH0                  |               | CUI       | PRE PHYS COUNT | 2.08     | +32,260    | \$671.01   | 59417 |
|                      |               | CUI       | PRE PHYS COUNT | 2.08     | +99,999    | \$2,079.98 |       |
| NET AMOUNT ADJUSTED: |               |           |                |          |            | \$2,750.99 |       |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|----------------|----------|------------|--------------|----------|
| RPK                  | 544-P09544 | CO9  | 113 X 700      | 2.08     | -79,100    | \$1,645.28-  | 13116501 |
|                      | 544-P09637 | CO9  | 107X700        | 2.08     | -74,900    | \$1,557.92-  |          |
|                      | 544-P09657 | CUG  | FROM 96% TO 66 | 2.08     | -99,000    | \$2,059.20-  |          |
|                      | 544-P09674 | CO9  | 179X225        | 2.08     | -40,275    | \$837.72-    |          |
|                      | 544-P09745 | CUG  |                | 2.08     | -99,000    | \$2,059.20-  |          |
|                      | 544-P09802 | CUG  |                | 2.08     | -99,000    | \$2,059.20-  |          |
|                      | 544-P09823 | CUG  |                | 2.08     | -99,000    | \$2,059.20-  |          |
|                      | 544-P09857 | CO9  | 98X700         | 2.08     | -68,600    | \$1,426.88-  |          |
|                      | 544-P09874 | CO9  | 102X700        | 2.08     | -71,400    | \$1,485.12-  |          |
|                      | 544-P09908 | CUG  |                | 2.08     | -99,000    | \$2,059.20-  |          |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$17,248.92- |          |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD      | FORM     | -PACKAGE-- | UM         | GL #  |
|----------------------|---------------|-----------|-----------|----------|------------|------------|-------|
| 01361-013            | SULFURIC ACID | 66 BE     | MCKS      | LIQ      | 055 GL ROM | EA         |       |
| TYP                  | REF-#         | OPID      | REASON    | AVG-COST | QTY-ADJUST | AMT-ADJUST |       |
| SCR                  |               | CUI       | DISCARDED | 33.24    | -1         | \$33.24-   | 59412 |
| NET AMOUNT ADJUSTED: |               |           |           |          |            | \$33.24-   |       |

MCK0062153

PGM: CK02121P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 61  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|---------------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01361-014            | SULFURIC ACID | 66 BE     | MCKS           | LIQ      | 015 GL CBY | EA         |       |  |  |
| TYP                  | REF-#         | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |               | CUI       | PRE PHYS COUNT | 11.18    | -9         | \$100.62-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |               |           |                |          |            | \$100.62-  |       |  |  |

| PROD-CD              | PROD-NAME     | QUALIFIER  | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|---------------|------------|----------------|----------|------------|------------|-------|--|--|
| 01361-019            | SULFURIC ACID | 1.835 ELYT | MCKS           | LIQ      | 055 GL RDM | EA         |       |  |  |
| TYP                  | REF-#         | OPID       | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |               | CUI        | PRE PHYS COUNT | 43.51    | -2         | \$87.02-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |               |            |                |          |            | \$87.02-   |       |  |  |

| PROD-CD              | PROD-NAME     | QUALIFIER  | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|---------------|------------|----------------|----------|------------|------------|-------|--|--|
| 01361-020            | SULFURIC ACID | 1.835 ELYT | MCKS           | LIQ      | 015 GL CBY | EA         |       |  |  |
| TYP                  | REF-#         | OPID       | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHD                  |               | CUI        | PRE PHYS COUNT | 11.08    | -2         | \$22.16-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |               |            |                |          |            | \$22.16-   |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|-----------------|-----------|-------------------------|----------|------------|-------------|----------|--|--|
| 01369-001            | N-BUTYL ALCOHOL | *         |                         | LIQ      | 001 GL BLK | LB          |          |  |  |
| TYP                  | REF-#           | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| OHD                  |                 | CUI       | TO COMPLT DRW DWN P9696 | 30.29    | +1         | \$0.30      | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                         |          |            | \$0.30      |          |  |  |
| TYP                  | REF-#           | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09696      | CO9       | 35X374                  | 30.29    | -13,180    | \$3,992.22- | 13116501 |  |  |
|                      | 544-P09740      | CO9       | FINISH J/T9696          | 30.29    | -1         | \$0.30-     |          |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                         |          |            | \$3,992.52- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |          |  |  |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|----------|--|--|
| 01369-002            | N-BUTYL ALCOHOL |           | MCKS           | LIQ      | 055 GL DRM | EA         |          |  |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| OHD                  |                 | CUI       | PRE PHYS COUNT | 123.95   | -6         | \$743.70-  | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$743.70-  |          |  |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P09888      | CUI       | WHITTAKER      | 123.95   | -1         | \$123.95-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$123.95-  |          |  |  |

MCK0062154

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                      | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|----------------------|-----------|---------------------------|----------|---------------|--------------|----------|--|
| 01377-001            | CAUSTIC SODA, LIQUID | 50%       | *                         | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#                | OPID      | REASON                    | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| OH                   |                      | CUI       | REVSE P09643              | 8.46     | +20,018       | \$1,693.52   | 59417    |  |
|                      |                      | CUI       | PRE PHYS COUNT            | 8.46     | -12,500       | \$1,057.50-  |          |  |
|                      |                      | CUI       | OVER DRAW ON IPO 9104     | 8.46     | +23,264       | \$1,968.13   |          |  |
| NET AMOUNT ADJUSTED: |                      |           |                           |          |               | \$2,604.15   |          |  |
| TYP                  | REF-#                | OPID      | REASON                    | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RCS                  | 544-P08807           | CUG       | VULCAN/SDM272             | 8.46     | -24,385       | \$2,062.97-  | 12492    |  |
|                      | 544-P09455           | C09       | DID NOT DO RPK ON J/T9658 | 8.46     | -22,840       | \$1,932.26-  |          |  |
| NET AMOUNT ADJUSTED: |                      |           |                           |          |               | \$3,995.23-  |          |  |
| TYP                  | REF-#                | OPID      | REASON                    | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P09508           | C09       | 3800G                     | 8.46     | -21,902       | \$1,852.91-  | 13116501 |  |
|                      | 544-P09532           | C09       | 4500G                     | 8.46     | -8,256        | \$698.46-    |          |  |
|                      | 544-P09608           | C09       | 3800 G                    | 8.46     | -21,901       | \$1,852.82-  |          |  |
|                      | 544-P09609           | C09       | 4000G BLEND               | 8.46     | -23,938       | \$2,025.15-  |          |  |
|                      | 544-P09610           | C09       | 4500G BLEACH              | 8.46     | -7,581        | \$641.35-    |          |  |
|                      | 544-P09619           | C09       | 1500G                     | 8.46     | -5,615        | \$475.03-    |          |  |
|                      | 544-P09623           | C09       | 100X680                   | 8.46     | -34,895       | \$2,952.12-  |          |  |
|                      | 544-P09642           | C09       | 40000#                    | 8.46     | -18,227       | \$1,542.00-  |          |  |
|                      | 544-P09643           | C09       | 3500G                     | 8.46     | -20,018       | \$1,693.52-  |          |  |
|                      | 544-P09651           | C09       | BLEND/P09525 ALSO         | 8.46     | -1            | \$0.08-      |          |  |
|                      | 544-P09652           | C09       | 196X680                   | 8.46     | -68,394       | \$5,786.13-  |          |  |
|                      | 544-P09659           | C09       | FLETCHER OIL W15430       | 8.46     | -2,851        | \$241.19-    |          |  |
|                      | 544-P09680           | C09       | 50X550                    | 8.46     | -4,417        | \$373.68-    |          |  |
|                      | 544-P09695           | C09       | MCDONNELL DOUG W15428     | 8.46     | -1,818        | \$153.80-    |          |  |
|                      | 544-P09758           | C09       | GENL MOTORSW.O.??         | 8.46     | -11,343       | \$959.62-    |          |  |
|                      | 544-P09776           | C09       | NI IND W15573             | 8.46     | -4,706        | \$398.13-    |          |  |
|                      | 544-P09784           | C09       | 50 X 550                  | 8.46     | -4,417        | \$373.68-    |          |  |
|                      | 544-P09794           | C09       | INTL EXTRUSION BLEND      | 8.46     | -24,271       | \$2,053.33-  |          |  |
|                      | 544-P09796           | C09       | NI IND W15572             | 8.46     | -8,041        | \$680.27-    |          |  |
|                      | 544-P09816           | C09       | 159X680                   | 8.46     | -55,483       | \$4,693.86-  |          |  |
|                      | 544-P09839           | C09       | MC DOUGLAS W15664         | 8.46     | -2,289        | \$193.65-    |          |  |
|                      | 544-P09850           | C09       | NI IND W15483             | 8.46     | -1,590        | \$134.51-    |          |  |
|                      | 544-P09855           | C09       | NI IND W15643             | 8.46     | -21,901       | \$1,852.82-  |          |  |
|                      | 544-P09856           | CUI       | 99 X 680 POLY             | 8.46     | -34,546       | \$2,922.59-  |          |  |
|                      | 544-P09869           | CUI       | CHELACLEAN M.B. W15703    | 8.46     | -18,576       | \$1,571.53-  |          |  |
|                      | 544-P09877           | C09       | 71X680                    | 8.46     | -24,775       | \$2,095.97-  |          |  |
|                      | 544-P09890           | C09       | ITT CANNON                | 8.46     | -17,259       | \$1,460.11-  |          |  |
|                      | 544-P09909           | C09       | CUT/BLEND                 | 8.46     | -5,973        | \$505.32-    |          |  |
|                      | 544-P09922           | C09       | W15759/P09906 CANG        | 8.46     | -2,881        | \$243.73-    |          |  |
|                      | 544-P09923           | C09       | NI IND W15643             | 8.46     | -411          | \$34.77-     |          |  |
| NET AMOUNT ADJUSTED: |                      |           |                           |          |               | \$40,462.13- |          |  |

MCK0062155

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 63  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|----------------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01377-004            | CAUSTIC SODA, LIQUID | 50% M.C.  | *              | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#                | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09505           | CO9       | 37X680         | 9.92     | -12,911    | \$1,280.77- | 13116501 |  |
|                      | 544-P09581           | CO9       | 45 X 680       | 9.92     | -15,703    | \$1,557.74- |          |  |
|                      | 544-P09796           | CO9       | NI IND W15572  | 9.92     | -13,881    | \$1,377.00- |          |  |
|                      | 544-P09871           | CUG       | USED FOR BLEND | 9.92     | -13,876    | \$1,376.50- |          |  |
|                      | 544-P09893           | CO9       | 98X680         | 9.92     | -34,197    | \$3,392.34- |          |  |
| NET AMOUNT ADJUSTED: |                      |           |                |          |            | \$8,984.35- |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|----------------------|-----------|--------------------|----------|------------|-------------|----------|--|
| 01377-005            | CAUSTIC SODA, LIQUID | 50%       | MCKS               | LIQ      | 055 GL RDM | EA          |          |  |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| OH0                  |                      | CUI       | PRE PHYS COUNT     | 47.95    | -13        | \$623.35-   | 59417    |  |
|                      |                      | CUI       | S/B PC01377007-MC  | 47.95    | -37        | \$1,774.15- |          |  |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$2,397.50- |          |  |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P09817           | CO9       | NL TREATING W15608 | 47.95    | -1         | \$47.95-    | 13116501 |  |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$47.95-    |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|----------------------|-----------|--------------------|----------|------------|------------|----------|--|
| 01377-006            | CAUSTIC SODA, LIQUID | 50%       | MCKS               | LIQ      | 055 GL DRM | EA         |          |  |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P09525           | CO9       | 4200G BLEND        | 50.85    | -1         | \$50.85-   | 13116501 |  |
|                      | 544-P09615           | CO9       | 4200G BLEND        | 50.85    | -1         | \$50.85-   |          |  |
|                      | 544-P09682           | CO9       | NL TREATING W15465 | 50.85    | -1         | \$50.85-   |          |  |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$152.55-  |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|----------------------|-----------|-------------------|----------|------------|------------|-------|--|
| 01377-007            | CAUSTIC SODA, LIQUID | 50% M.C.  | MCKS              | LIQ      | 055 GL RDM | EA         |       |  |
| TYP                  | REF-#                | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |                      | CUI       | FROM P.C.01377005 | 51.13    | +37        | \$1,891.81 | 59417 |  |
|                      |                      | CUI       | PRE PHYS COUNT    | 51.13    | -1         | \$51.13-   |       |  |
| NET AMOUNT ADJUSTED: |                      |           |                   |          |            | \$1,840.68 |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|------------------|-----------|------------------------|----------|------------|------------|-------|--|
| 01379-011            | CARBON-ACTIVATED | 12X20     | *                      | GRAN     | 040 LB BAG | EA         |       |  |
| TYP                  | REF-#            | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| INT                  |                  | CUI       | USED FOR FILTERING MTL | 39.07    | -2         | \$78.14-   | 73550 |  |
| NET AMOUNT ADJUSTED: |                  |           |                        |          |            | \$78.14-   |       |  |

MCK0062156

PGM: CK02L21P VER 01.4

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 64

DATE: 02/04/85 TIME: 13:32:21

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6K STEP: CN10G05

01/85

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------------|------------|----------|----------|------------|--------------|----------|--|
| 01391-019            | CHELATING AGENTS | EDTANA4-38 | *        | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#            | OPID       | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P09840       | C09        | 65 X 600 | 27.50    | -39,670    | \$10,909.25- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |            |          |          |            | \$10,909.25- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|--------------------|-----------|----------------|----------|------------|-----------|-------|--|
| 01484-003            | DIMETHYL FORMAMIDE |           | MCKS           | LIQ      | 055 GL DRM | EA        |       |  |
| TYP                  | REF-#              | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OHD                  |                    | CUI       | PRE PHYS COUNT | 185.89   | +1         | \$185.89  | 59417 |  |
| NET AMOUNT ADJUSTED: |                    |           |                |          |            | \$185.89  |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|------------------|----------|------------|-------------|----------|--|
| 01532-001            | ISOBUTYL ACETATE |           | *                | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON           | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09640       | C09       | 19 X 397         | 43.99    | -7,460     | \$3,281.65- | 13116501 |  |
|                      | 544-P09888       | CUI       | WHITTAKER W15768 | 43.99    | -3,034     | \$1,334.66- |          |  |
| NET AMOUNT ADJUSTED: |                  |           |                  |          |            | \$4,616.31- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|--------|----------|------------|-------------|----------|--|
| 01559-001            | GLYCOL ETHER TPM |           | MSS    | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09653       | C09       | 10X445 | 36.20    | -4,440     | \$1,607.28- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |            | \$1,607.28- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|------------------|-----------|----------------|----------|------------|-----------|-------|--|
| 01562-003            | ETHANOL (NEOSOL) | 190       | MCKS           | LIQ      | 054 GL DRM | EA        |       |  |
| TYP                  | REF-#            | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OHD                  |                  | CUI       | PRE PHYS COUNT | 110.31   | +3         | \$330.93  | 59417 |  |
| NET AMOUNT ADJUSTED: |                  |           |                |          |            | \$330.93  |       |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|---------------|----------|------------|--------------|----------|--|
| 01571-001            | CAUSTIC POTASH LIQUID | 50%       | *             | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON        | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P09633            | C09       | 3700G BLEND   | 16.20    | -40,818    | \$6,612.52-  | 13116501 |  |
|                      | 544-P09907            | CUI       | 57 X 660 POLY | 16.20    | -37,620    | \$6,094.44-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |               |          |            | \$12,706.96- |          |  |

MCK0062157

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 65  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|-----------------------|-----------|----------------|----------|------------|-------------|-------|--|
| 01571-002            | CAUSTIC POTASH LIQUID | 50%       | MCKS           | LIQ      | 055 GL     | DRM EA      |       |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| OH0                  |                       | CUI       | PRE-PHYS COUNT | 128.66   | -9         | \$1,157.94- | 59417 |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$1,157.94- |       |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|------------------|-----------|---------|----------|------------|-----------|-------|--|
| 01641-005            | POTASSIUM IODIDE |           | USP     | GRAN     | 025 LB     | DRM EA    |       |  |
| TYP                  | REF-#            | OPID      | REASON  | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| INT                  |                  | CUI       | LAB USE | 251.01   | -1         | \$251.01- | 73550 |  |
| NET AMOUNT ADJUSTED: |                  |           |         |          |            | \$251.01- |       |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|--------------------------|-----------|-------------------|----------|------------|-------------|-------|--|
| 01667-002            | CAUSTIC SODA(GLUCONATED) | 50%       | *                 | LIQ      | 001 GL     | BLK LB      |       |  |
| TYP                  | REF-#                    | OPID      | REASON            | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| RCS                  | 544-P09643               | CUI       | IPD 9643          | 7.07     | -21,118    | \$1,493.04- | 12492 |  |
|                      | 544-P09643               | CUI       | IPD 9643 OVR RCTD | 7.07     | -21,192    | \$1,498.27- |       |  |
| NET AMOUNT ADJUSTED: |                          |           |                   |          |            | \$2,991.31- |       |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|--------------------------|-----------|----------------|----------|------------|-----------|-------|--|
| 01677-002            | MINERAL SPIRITS, REGULAR |           | MCKS           | LIQ      | 055 GL     | DRM EA    |       |  |
| TYP                  | REF-#                    | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH0                  |                          | CUI       | PRE PHYS COUNT | 77.68    | -5         | \$388.40- | 59417 |  |
| NET AMOUNT ADJUSTED: |                          |           |                |          |            | \$388.40- |       |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|------------------------|-----------|----------------|----------|------------|-------------|-------|--|
| 01695-002            | MINERAL SPIRITS, SHORT |           | MCKS           | LIQ      | 055 GL     | DRM EA      |       |  |
| TYP                  | REF-#                  | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| OH0                  |                        | CUI       | PRE PHYS COUNT | 84.13    | -13        | \$1,093.69- | 59417 |  |
| NET AMOUNT ADJUSTED: |                        |           |                |          |            | \$1,093.69- |       |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM        |       |  |
|----------------------|-----------|-----------|----------------|----------|------------|-----------|-------|--|
| 01698-002            | KEROSENE  |           | MCKS           | LIQ      | 055 GL     | DRM EA    |       |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH0                  |           | CUI       | PRE PHYS COUNT | 77.82    | +5         | \$389.10  | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$389.10  |       |  |

MCK0062158

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01699-001            | KEROSENE  | 450       | *              | LIQ      | 001 GL BLK | LB         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHQ                  |           | CUI       | PRE PHYS COUNT | 17.28    | -1,049     | \$181.27-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$181.27-  |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |  |
|----------------------|------------|-----------|----------|----------|------------|--------------|----------|--|--|
| 01724-002            | DALPAD A   |           | *        | LIQ      | 001 GL BLK | LB           |          |  |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P09527 | C09       | 10X505   | 59.40    | -4,745     | \$2,818.53-  | 13116501 |  |  |
|                      | 544-P09530 | C09       | 29 X 505 | 59.40    | -14,645    | \$8,699.13-  |          |  |  |
|                      | 544-P09870 | C09       | 19X505   | 59.40    | -9,745     | \$5,788.53-  |          |  |  |
|                      | 544-P09872 | C09       | 17X505   | 59.40    | -8,735     | \$5,188.59-  |          |  |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |            | \$22,494.78- |          |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|--|
| 01724-003            | DALPAD A  |           | MCKS           | LIQ      | 055 GL DRM | EA         |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |  |
| OHQ                  |           | CUI       | PRE PHYS COUNT | 329.80   | -1         | \$329.80-  | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$329.80-  |       |  |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD    | FORM     | -PACKAGE-- | UM         |          |  |  |
|----------------------|--------------|-----------|---------|----------|------------|------------|----------|--|--|
| 01804-001            | MCKSOLV PX-3 |           | *       | LIQ      | 001 GL BLK | LB         |          |  |  |
| TYP                  | REF-#        | OPID      | REASON  | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P09734   | C09       | 9 X 409 | 23.29    | -3,830     | \$892.01-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |              |           |         |          |            | \$892.01-  |          |  |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |       |  |  |
|----------------------|-----------------------|-----------|----------------|----------|------------|-------------|-------|--|--|
| 01806-001            | MCKSOLV VM & P NAPTHA |           | *              | LIQ      | 001 GL BLK | LB          |       |  |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OHQ                  |                       | CUI       | PRE PHYS COUNT | 18.34    | -11,550    | \$2,118.27- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$2,118.27- |       |  |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM         |          |  |  |
|----------------------|-----------------------|-----------|------------------|----------|------------|------------|----------|--|--|
| 01806-002            | MCKSOLV VM & P NAPTHA |           | MCKS             | LIQ      | 055 GL DRM | EA         |          |  |  |
| TYP                  | REF-#                 | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P09888            | CUI       | WHITTAKER W15768 | 83.41    | -6         | \$500.46-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                       |           |                  |          |            | \$500.46-  |          |  |  |

MCK0062159

DATE: 02/04/85 TIME: 13:32:21 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6K STEP: CN10G05

01/85

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM         |          |  |  |
|----------------------|-------------|-----------|---------------|----------|---------------|------------|----------|--|--|
| 02398-001            | LIME SLURRY | 40-42%    | *             | LIQ      | 001 GL BLK LB |            |          |  |  |
| TYP                  | REF-#       | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P09508  | C09       | 3800G         | 1.83     | -5,180        | \$94.79-   | 13116501 |  |  |
|                      | 544-P09608  | C09       | 3800G         | 1.83     | -5,181        | \$94.81-   |          |  |  |
|                      | 544-P09796  | C09       | NI IND W15572 | 1.83     | -6,179        | \$113.08-  |          |  |  |
|                      | 544-P09855  | C09       | NI IND W15643 | 1.83     | -4,501        | \$82.37-   |          |  |  |
|                      | 544-P09890  | C09       | ITT CANNON    | 1.83     | -3,967        | \$72.60-   |          |  |  |
| NET AMOUNT ADJUSTED: |             |           |               |          |               | \$457.65-  |          |  |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|------------------|-----------|----------------|----------|---------------|------------|-------|--|--|
| 02635-001            | CHELACLEAN 103 B |           | MCKS           | LIQ      | 001 GL BLK LB |            |       |  |  |
| TYP                  | REF-#            | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHG                  |                  | CUI       | PRE PHYS COUNT | 5.10     | -1,000        | \$51.00-   | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                  |           |                |          |               | \$51.00-   |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|------------|-----------|----------|----------|---------------|-------------|----------|--|--|
| 02701-001            | KEROSENE   |           | *        | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09726 | C09       | 18 X 372 | 15.96    | -6,950        | \$1,109.22- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |            |           |          |          |               | \$1,109.22- |          |  |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|--------------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 02704-001            | DIMETHYL FORMAMIDE |           | *      | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#              | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09757         | C09       | 14X430 | 38.20    | -6,110        | \$2,334.02- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                    |           |        |          |               | \$2,334.02- |          |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-----------|-----------|----------------|----------|---------------|------------|-------|--|--|
| 02710-001            | NEODOL    | 25-3S     | *              | LIQ      | 001 GL BLK LB |            |       |  |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHG                  |           | CUI       | PRE PHYS COUNT | 37.71    | -10           | \$3.77-    | 59417 |  |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |               | \$3.77-    |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-----------------|-----------|--------|----------|---------------|-------------|----------|--|--|
| 02719-001            | GLYCOL ETHER PM |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P09896      | C09       | 17X420 | 35.30    | -7,580        | \$2,675.74- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |        |          |               | \$2,675.74- |          |  |  |

MCK00062160

PGM: CK02L21P VER 01.4  
DATE: 02/04/85 TIME: 13:32:21

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

REPORT NO: CK02R25A PAGE: 68  
JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD      | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|-----------|----------|---------------|--------------|----------|--|
| 02755-013            | HYDROGEN PEROXIDE | 35% TECH  | MSS       | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON    | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P09728        | CUI       | 164 X 500 | 23.62    | -83,728       | \$19,776.55- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |           |           |          |               | \$19,776.55- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|----------|----------|---------------|--------------|----------|--|
| 02755-017            | HYDROGEN PEROXIDE | 50% TECH  | MSS      | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON   | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P09551        | CO9       | 31 X 500 | 33.42    | -15,500       | \$5,180.10-  | 13116501 |  |
|                      | 544-P09554        | CO9       | 34X500   | 33.42    | -17,000       | \$5,681.40-  |          |  |
|                      | 544-P09605        | CO9       | 46 X 500 | 33.42    | -23,000       | \$7,686.60-  |          |  |
|                      | 544-P09667        | CO9       | 20X500   | 33.42    | -10,000       | \$3,342.00-  |          |  |
|                      | 544-P09683        | CO9       | 110X500  | 33.42    | -55,000       | \$18,381.00- |          |  |
|                      | 544-P09763        | CUI       | DILUTION | 33.42    | -33,556       | \$11,214.42- |          |  |
|                      | 544-P09821        | CO9       | 18 X 500 | 33.42    | -9,000        | \$3,007.80-  |          |  |
|                      | 544-P09852        | CO9       | 50X500   | 33.42    | -25,000       | \$8,355.00-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |          |          |               | \$62,848.32- |          |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02758-001            | MINERAL SPIRITS, SHORT | *         |        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                  | OPID      | REASON | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09692             | CO9       | 35X360 | 17.97    | -12,640       | \$2,271.41- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                        |           |        |          |               | \$2,271.41- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|--------------------------|-----------|----------------|----------|---------------|-------------|----------|--|
| 02760-001            | MINERAL SPIRITS, REGULAR | *         |                | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                    | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| OHD                  |                          | CUI       | PRE PHYS COUNT | 17.56    | -2,579        | \$452.87-   | 59417    |  |
| NET AMOUNT ADJUSTED: |                          |           |                |          |               | \$452.87-   |          |  |
| TYP                  | REF-#                    | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P09504               | CO9       | 80X300         | 17.56    | -28,560       | \$5,015.14- | 13116501 |  |
|                      | 544-P09847               | CO9       | 15 X 350       | 17.56    | -5,355        | \$940.34-   |          |  |
| NET AMOUNT ADJUSTED: |                          |           |                |          |               | \$5,955.48- |          |  |

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |       |  |
|-----------|-------------------|-----------|----------------|----------|---------------|-------------|-------|--|
| 02806-007 | TRICHLOROETHYLENE |           | MSS            | LIQ      | 001 LB BLK LB |             |       |  |
| TYP       | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #  |  |
| OHD       |                   | CUI       | PHYSICAL       | 36.21    | -1,261        | \$456.61-   | 59417 |  |
|           |                   | CUI       | PRE PHYS COUNT | 36.21    | +1,597        | \$578.27    |       |  |
|           |                   | CUI       | PRE PHYS COUNT | 36.21    | -3,206        | \$1,160.89- |       |  |

MCK0062161

PGM: CK02L21P VER 01.4

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 69

DATE: 02/04/85 TIME: 13:32:21 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
01/85

JOB: CN10J6K STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$1,039.23-

| TYP | REF-#      | OPID | REASON | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|--------|----------|------------|-------------|----------|
| RPK | 544-P09577 | C09  | 26X660 | 36.21    | -18,150    | \$6,572.12- | 13116501 |

NET AMOUNT ADJUSTED: \$6,572.12-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           | GL #     |
|-----------|------------|-----------|----------|----------|------------|--------------|----------|
| 02830-006 | DDBSA      |           | *        | LIQ      | 001 GL BLK | LB           |          |
| TYP       | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
| RPK       | 544-P09526 | C09       | 54 X 480 | 50.35    | -21,900    | \$11,026.65- | 13116501 |

NET AMOUNT ADJUSTED: \$11,026.65-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          | GL #     |
|-----------|------------|-----------|----------|----------|------------|-------------|----------|
| 02918-001 | EXXATE     | 700       | *        | LIQ      | 001 GL BLK | LB          |          |
| TYP       | REF-#      | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK       | 544-P09570 | C09       | 26 X 393 | 62.90    | -10,380    | \$6,529.02- | 13116501 |

NET AMOUNT ADJUSTED: \$6,529.02-

MCK0062162

PGM: CK02L21P VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 13  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------------|-----------|----------|----------|---------------|-------------|----------|--|
| 01002-001            | PROPYLENE GLYCOL |           | *        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#            | OPID      | REASON   | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P10327       | C09       | 13 X 480 | 37.81    | -6,365        | \$2,406.61- | 13116501 |  |
|                      | 544-P10518       | C09       | 41 X 480 | 37.81    | -19,680       | \$7,441.01- |          |  |
| NET AMOUNT ADJUSTED: |                  |           |          |          |               | \$9,847.62- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------------|-----------|--------|----------|---------------|--------------|----------|--|
| 01002-005            | PROPYLENE GLYCOL |           | USP    | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P10367       | CUG       |        | 37.82    | -44,430       | \$16,803.43- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |               | \$16,803.43- |          |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------------------|-----------|----------|----------|---------------|--------------|----------|--|
| 01004-001            | HYDROXYACETIC ACID 70% |           | *        | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#                  | OPID      | REASON   | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P10454             | CUI       | 90 X 550 | 59.05    | -49,950       | \$29,495.48- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                        |           |          |          |               | \$29,495.48- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|-----------|-----------|------------------------|----------|---------------|------------|-------|--|
| 01011-002            | CHLORINE  |           | *                      | GAS      | 001 LB BLK LB |            |       |  |
| TYP                  | REF-#     | OPID      | REASON                 | AVG-COST | QTY-ADJST     | AMT-ADJST  | GL #  |  |
| OND                  |           | CUI       | OVER DRAW ON IPO 10065 | 6.97     | +33,264       | \$2,318.50 | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                        |          |               | \$2,318.50 |       |  |

| TYP                  | REF-#      | OPID | REASON             | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #  |
|----------------------|------------|------|--------------------|----------|-----------|-------------|-------|
| RCS                  | 544-P10637 | CUI  | CRCT RCT OF P10281 | 6.97     | -18,000   | \$1,254.60- | 12492 |
| NET AMOUNT ADJUSTED: |            |      |                    |          |           | \$1,254.60- |       |

| TYP | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #     |
|-----|------------|------|---------------|----------|-----------|-------------|----------|
| RPK | 544-P10065 | C09  | 84 X 550      | 6.97     | -39,732   | \$2,769.32- | 13116501 |
|     | 544-P10294 | C09  | 13 X TN       | 6.97     | -26,000   | \$1,812.20- |          |
|     | 544-P10304 | C09  | NI IND W16299 | 6.97     | -5,835    | \$406.70-   |          |
|     | 544-P10318 | C09  | 91X150/37XTN  | 6.97     | -87,650   | \$6,109.21- |          |
|     | 544-P10350 | C09  | 58X150/20XTN  | 6.97     | -48,700   | \$3,394.39- |          |
|     | 544-P10354 | C09  | 24 X TN       | 6.97     | -48,000   | \$3,345.60- |          |
|     | 544-P10376 | C09  | 16 X TN       | 6.97     | -32,000   | \$2,230.40- |          |
|     | 544-P10397 | C09  | 14 X TN       | 6.97     | -28,000   | \$1,951.60- |          |
|     | 544-P10400 | C09  | 83X550        | 6.97     | -6,391    | \$445.45-   |          |
|     | 544-P10420 | C09  | 15 X TN       | 6.97     | -30,000   | \$2,091.00- |          |
|     | 544-P10442 | C09  | 17XTN         | 6.97     | -34,000   | \$2,369.80- |          |
|     | 544-P10457 | C09  | NI IND W16498 | 6.97     | -5,443    | \$379.38-   |          |
|     | 544-P10461 | C09  | 26 X TN       | 6.97     | -52,000   | \$3,624.40- |          |
|     | 544-P10482 | CUI  | #339 10 TONS  | 6.97     | -20,000   | \$1,394.00- |          |

MCK0062181

PGM: CK02L2IP VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 14  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                          |      |         |             |
|------------|-----|--------------------------|------|---------|-------------|
| 544-P10504 | CO9 | 20 X 2000                | 6.97 | -40,000 | \$2,788.00- |
| 544-P10509 | CO9 | 1XTN(F/CYL RECALL&BULK)  | 6.97 | -2,355  | \$164.14-   |
| 544-P10513 | CO9 | 4 X TN                   | 6.97 | -8,000  | \$557.60-   |
| 544-P10515 | CO9 | 16XTN                    | 6.97 | -32,000 | \$2,230.40- |
| 544-P10521 | CO9 | 2 X 2000                 | 6.97 | -4,000  | \$278.80-   |
| 544-P10536 | CO9 | 21 X TN                  | 6.97 | -42,000 | \$2,927.40- |
| 544-P10546 | CO9 | 18X 2000                 | 6.97 | -36,000 | \$2,509.20- |
| 544-P10559 | CO9 | TO FILL 3 TNS (RECALL)   | 6.97 | -1,680  | \$117.10-   |
| 544-P10583 | CO9 | BAL/TNS ON RECALL P10581 | 6.97 | -4,660  | \$324.80-   |
| 544-P10584 | CO9 | 15XTN                    | 6.97 | -30,000 | \$2,091.00- |
| 544-P10600 | CO9 | NI IND W16641            | 6.97 | -6,356  | \$443.01-   |
| 544-P10607 | CO9 | REDWOOD CY TRTMNT W16672 | 6.97 | -6,315  | \$440.16-   |
| 544-P10638 | CO9 | CHLORINE RECALL/19XTN    | 6.97 | -31,950 | \$2,226.92- |
| 544-P10639 | CO9 | 12XTN                    | 6.97 | -24,000 | \$1,672.80- |
| 544-P10671 | CO9 | 13 X TN                  | 6.97 | -26,000 | \$1,812.20- |
| 544-P10674 | CO9 | 6 X TN                   | 6.97 | -12,000 | \$836.40-   |

NET AMOUNT ADJUSTED: \$53,743.38-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-----------|-----------|--------------------------|----------|------------|------------|-------|--|
| 01011-004 | CHLORINE  |           | MCKS                     | GAS      | 150 LB CYL | EA         |       |  |
| TYP       | REF-#     | OPID      | REASON                   | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH        |           | CUI       | TO CORRECT RCT OF P10581 | 24.60    | +1         | \$24.60    | 59417 |  |

NET AMOUNT ADJUSTED: \$24.60

| TYP | REF-#      | OPID | REASON                    | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|---------------------------|----------|------------|-------------|----------|
| RPK | 544-P10511 | CO9  | TRANS TO TONS/BULK        | 24.60    | -57        | \$1,402.20- | 13116501 |
|     | 544-P10512 | CO9  | TRANS TO BULK SKU         | 24.60    | -28        | \$688.80-   |          |
|     | 544-P10559 | CO9  | 3 TNS RECALL              | 24.60    | -29        | \$713.40-   |          |
|     | 544-P10581 | CO9  | CHLORINE RECALL6/TN       | 24.60    | -70        | \$1,722.00- |          |
|     | 544-P10628 | CO9  | 7240#BULK                 | 24.60    | -56        | \$1,377.60- |          |
|     | 544-P10629 | CO9  | 16XTNS                    | 24.60    | -20        | \$492.00-   |          |
|     | 544-P10637 | CO9  | CHLORINE RECALL/INTO BULK | 24.60    | -44        | \$1,082.40- |          |
|     | 544-P10638 | CO9  | CHLORINE RECALL/19XTN     | 24.60    | -50        | \$1,230.00- |          |
|     | 544-P10673 | CO9  | CHLORINE RECALL           | 24.60    | -15        | \$369.00-   |          |

NET AMOUNT ADJUSTED: \$9,077.40-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|-------------|-----------|-----------------|----------|------------|------------|-------|--|
| 01013-001 | ACETIC ACID | GLACIAL   | *               | LIQ      | 001 GL BLK | LB         |       |  |
| TYP       | REF-#       | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH        |             | CUI       | OVER DRW P10306 | 23.46    | +2,344     | \$549.90   | 59417 |  |

NET AMOUNT ADJUSTED: \$549.90

| TYP | REF-#      | OPID | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|----------|----------|------------|-------------|----------|
| RPK | 544-P10274 | CO9  | 3 X 2930 | 23.46    | -7,194     | \$1,687.71- | 13116501 |
|     | 544-P10306 | CO9  | 4 X 2930 | 23.46    | -2,346     | \$550.37-   |          |
|     | 544-P10306 | CO9  | 4 X 2930 | 23.46    | -9,374     | \$2,199.14- |          |

MCK0062182

PGM: CK02L2IP VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 15  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |          |       |         |             |
|------------|-----|----------|-------|---------|-------------|
| 544-P10416 | CO9 | 40 X 450 | 23.46 | -18,000 | \$4,222.80- |
| 544-P10417 | CO9 | 30 X 450 | 23.46 | -10,950 | \$2,568.87- |
| 544-P10617 | CO9 | 30 X 450 | 23.46 | -10,800 | \$2,533.68- |
| 544-P10618 | CO9 | 50 X 450 | 23.46 | -22,500 | \$5,278.50- |

NET AMOUNT ADJUSTED: \$19,041.07-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|------------|-----------|--------------------------|----------|---------------|-------------|----------|--|
| 01018-001 | ACETONE    |           | *                        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#      | OPID      | REASON                   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P10333 | CO9       | WESTERN SPECIALTY W16358 | 22.46    | -5,404        | \$1,213.74- | 13116501 |  |
|           | 544-P10445 | CO9       | WEST SPEC W16486         | 22.46    | -4,751        | \$1,067.07- |          |  |

NET AMOUNT ADJUSTED: \$2,280.81-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|-----------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01053-003 | N-BUTYL ACETATE | 99%       | *                 | LIQ      | 001 GL BLK LB |            |       |  |
| TYP       | REF-#           | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD       |                 | CUI       | S/B VAR ON P10302 | 44.36    | -732          | \$324.72-  | 59417 |  |

NET AMOUNT ADJUSTED: \$324.72-

|     |            |      |                     |          |            |             |          |
|-----|------------|------|---------------------|----------|------------|-------------|----------|
| TYP | REF-#      | OPID | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK | 544-P10302 | CO9  | WESTERN SPEC W16312 | 44.36    | -9,188     | \$4,075.80- | 13116501 |
|     | 544-P10444 | CO9  | WEST SPEC W16486    | 44.36    | -10,106    | \$4,483.02- |          |
|     | 544-P10591 | CO9  | WEST SPEC W16683    | 44.36    | -9,188     | \$4,075.80- |          |

NET AMOUNT ADJUSTED: \$12,634.62-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|-----------------|-----------|----------|----------|---------------|-------------|----------|--|
| 01057-001 | GLYCOL ETHER EM |           | MSS      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P10321      | CUI       | 38 X 440 | 29.60    | -16,680       | \$4,937.28- | 13116501 |  |
|           | 544-P10664      | CO9       | 18 X 440 | 29.60    | -8,160        | \$2,415.36- |          |  |

NET AMOUNT ADJUSTED: \$7,352.64-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM         |          |  |
|-----------|--------------|-----------|-----------------------|----------|---------------|------------|----------|--|
| 01066-002 | DEQUEST 2000 |           | MSS                   | SOLN     | 600 LB DRN EA |            |          |  |
| TYP       | REF-#        | OPID      | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK       | 544-P10434   | CO9       | MILLER BREWING W16322 | 433.31   | -1            | \$433.31-  | 13116501 |  |
|           | 544-P10647   | CO9       | MILLER BREW W16727    | 433.31   | -1            | \$433.31-  |          |  |

NET AMOUNT ADJUSTED: \$866.62-

MCK0062183

DATE: 03/30/85 TIME: 10:53:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|-----------------|-----------|--------------------|----------|---------------|------------|-------|--|
| 01081-001 | GLYCOL ETHER EB |           | MSS                | LIQ      | 001 GL BLK LB |            |       |  |
| TYP       | REF-#           | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH0       |                 | CUI       | MTL LOSS-C EXPLNTN | 33.40    | -1,172        | \$391.45-  | 59417 |  |

NET AMOUNT ADJUSTED: \$391.45-

| TYP | REF-#      | OPID | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|---------------------|----------|------------|-------------|----------|
| RPK | 544-P10333 | C09  | WESTERN SPEC W16358 | 33.40    | -450       | \$150.30-   | 13116501 |
|     | 544-P10390 | C09  | 1 X 2450            | 33.40    | -2,450     | \$818.30-   |          |
|     | 544-P10445 | C09  | WEST SPEC W16486    | 33.40    | -398       | \$132.93-   |          |
|     | 544-P10517 | C09  | 17X415              | 33.40    | -7,196     | \$2,403.46- |          |

NET AMOUNT ADJUSTED: \$3,504.99-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD    | FORM     | -PACKAGE--    | UM          |       |  |
|-----------|------------|-----------|---------|----------|---------------|-------------|-------|--|
| 01104-008 | GLYCERINE  | 96%       | USP     | LIQ      | 001 GL BLK LB |             |       |  |
| TYP       | REF-#      | OPID      | REASON  | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| RCS       | 544-P09386 | CUG       | SOM/284 | 83.84    | -1,709        | \$1,432.83- | 12492 |  |

NET AMOUNT ADJUSTED: \$1,432.83-

| TYP | REF-#      | OPID | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|-----|------------|------|----------|----------|------------|--------------|----------|
| RPK | 544-P10412 | C09  | 1 X 570  | 83.84    | -1,080     | \$905.47-    | 13116501 |
|     | 544-P10413 | C09  | 34 X 570 | 83.84    | -19,380    | \$16,248.19- |          |
|     | 544-P10447 | C09  | 72 X 570 | 83.84    | -41,040    | \$34,407.94- |          |
|     | 544-P10448 | C09  | 1 X 570  | 83.84    | -900       | \$754.56-    |          |

NET AMOUNT ADJUSTED: \$52,316.16-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM           |          |  |
|-----------|------------|-----------|--------|----------|---------------|--------------|----------|--|
| 01110-001 | FREON      | TF        | MSS    | LIQ      | 001 GL BLK LB |              |          |  |
| TYP       | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK       | 544-P10488 | C09       | 50X690 | 90.02    | -35,190       | \$31,678.04- | 13116501 |  |
|           | 544-P10489 | C09       | 71X60  | 90.02    | -4,345        | \$3,911.37-  |          |  |

NET AMOUNT ADJUSTED: \$35,589.41-

| PROD-CD   | PROD-NAME          | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM           |          |  |
|-----------|--------------------|-----------|--------------------------|----------|---------------|--------------|----------|--|
| 01113-007 | BORAX PENTAHYDRATE | 5 MOL     | *                        | GRAN     | 001 LB BLK LB |              |          |  |
| TYP       | REF-#              | OPID      | REASON                   | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK       | 544-P10175         | C09       | ACFX61973                | 11.81    | -82,850       | \$9,784.59-  | 13116501 |  |
|           | 544-P10175         | C09       | ACFX61973                | 11.81    | -82,850       | \$9,784.59-  |          |  |
|           | 544-P10272         | C09       | 1927X100                 | 11.81    | -99,950       | \$11,804.10- |          |  |
|           | 544-P10272         | C09       | 1927X100                 | 11.81    | -99,950       | \$11,804.10- |          |  |
|           | 544-P10382         | CUI       | 18 SUPER SACS-THERMOSAFE | 11.81    | -36,000       | \$4,251.60-  |          |  |
|           | 544-P10463         | C09       | MCK STK F/THERMAL SAFE   | 11.81    | -70,000       | \$8,267.00-  |          |  |
|           | 544-P10495         | C09       | MCK STK F/THERMAL SAFE   | 11.81    | -1            | \$0.12-      |          |  |

MCK0062184

DATE: 03/30/85 TIME: 10:53:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6

STEP: CN10G05

03/85

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$55,696.10-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|------------|-----------|-----------------------|----------|------------|-------------|----------|--|--|
| 01120-012 | SODA ASH   | DENSE     | *                     | GRAN     | 001 LB BLK | LB          |          |  |  |
| TYP       | REF-#      | OPID      | REASON                | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |  |
| RPK       | 544-P10050 | CUI       | STAX 76169 985 X 100  | 5.55     | -99,999    | \$5,549.94- | 13116501 |  |  |
|           | 544-P10050 | CUI       | STAX 76169 985 X 100  | 5.55     | -5,401     | \$299.76-   |          |  |  |
|           | 544-P10190 | CO9       | ACFX60652             | 5.55     | -1,578     | \$87.58-    |          |  |  |
|           | 544-P10290 | CUI       | STAX 76169-1770 X 50# | 5.55     | -93,200    | \$5,172.60- |          |  |  |
|           | 544-P10292 | CO9       | ACFX60154/864 X 100   | 5.55     | -83,800    | \$4,650.90- |          |  |  |
|           | 544-P10313 | CO9       | 2050 X 100            | 5.55     | -99,999    | \$5,549.94- |          |  |  |
|           | 544-P10313 | CO9       | 2050 X 100            | 5.55     | -99,999    | \$5,549.94- |          |  |  |
|           | 544-P10313 | CO9       | 2050 X 100            | 5.55     | -2         | \$0.11-     |          |  |  |
|           | 544-P10314 | CO9       | 1000X100              | 5.55     | -50,000    | \$2,775.00- |          |  |  |
|           | 544-P10486 | CO9       | ACFX60652             | 5.55     | -80,350    | \$4,459.43- |          |  |  |
|           | 544-P10545 | CO9       | ACFX61606/1014X100    | 5.55     | -50,000    | \$2,775.00- |          |  |  |
|           | 544-P10545 | CO9       | ACFX61606/1014X100    | 5.55     | -50,000    | \$2,775.00- |          |  |  |
|           | 544-P10575 | CO9       | 1993 X 50             | 5.55     | -98,725    | \$5,479.24- |          |  |  |
|           | 544-P10576 | CO9       | 1020 X 100            | 5.55     | -50,538    | \$2,804.86- |          |  |  |
|           | 544-P10576 | CO9       | 1020 X 100            | 5.55     | -50,537    | \$2,804.80- |          |  |  |

NET AMOUNT ADJUSTED: \$50,734.10-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD                 | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-----------|-----------|----------------------|----------|------------|-------------|-------|--|--|
| 01120-015 | SODA ASH  | DENSE     | MCKS                 | GRAN     | 100 LB BAG | EA          |       |  |  |
| TYP       | REF-#     | OPID      | REASON               | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |  |
| OH0       |           | CUI       | RCD WRNG P.C. P10384 | 6.91     | -479       | \$3,309.89- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$3,309.89-

| TYP | REF-#      | OPID | REASON                    | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #  |  |  |
|-----|------------|------|---------------------------|----------|-----------|-------------|-------|--|--|
| RCS | 544-P10050 | CO9  | SDM3122/INTER AM          | 6.91     | -480      | \$3,316.80- | 12492 |  |  |
|     | 544-P10050 | CO9  | SDM3123/INTER AM          | 6.91     | -480      | \$3,316.80- |       |  |  |
|     | 544-P10190 | CO9  | SDM3121                   | 6.91     | -480      | \$3,316.80- |       |  |  |
|     | 544-P10190 | CO9  | SDM3120                   | 6.91     | -480      | \$3,316.80- |       |  |  |
|     | 544-P10292 | CO9  | SDM3127                   | 6.91     | -480      | \$3,316.80- |       |  |  |
|     | 544-P10292 | CUI  | FRT.GRWRS-STAU.F.SDM 3119 | 6.91     | -480      | \$3,316.80- |       |  |  |

NET AMOUNT ADJUSTED: \$19,900.80-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-----------|-----------|-------------------|----------|------------|-------------|-------|--|--|
| 01120-016 | SODA ASH  | DENSE     | MCKS              | GRAN     | 050 LB BAG | EA          |       |  |  |
| TYP       | REF-#     | OPID      | REASON            | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |  |
| OH0       |           | CUI       | WRNG P.C. P10519  | 3.54     | -800       | \$2,832.00- | 59417 |  |  |
|           |           | CUI       | WRONG P.C. P10383 | 3.54     | -2,000     | \$7,080.00- |       |  |  |

NET AMOUNT ADJUSTED: \$9,912.00-

MCK0062185

PGM: CK02L21P VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 18  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-------------------|-----------|----------------|----------|------------|--------------|----------|--|
| 01124-070            | HYDROGEN PEROXIDE | 70% TECH  | MSS            | LIQ      | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10289        | C09       | 7200G BLEND    | 46.06    | -52,626    | \$24,239.54- | 13116501 |  |
|                      | 544-P10640        | C09       | DILUTION 8000G | 46.06    | -57,330    | \$26,406.20- |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$50,645.74- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-------------------|-----------|------------------|----------|------------|-------------|----------|--|
| 01125-001            | HYDROCHLORIC ACID | 20 BE     | *                | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#             | OPID      | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10275        | C09       | 88 X 140/PARTIAL | 3.30     | -12,320    | \$406.56-   | 13116501 |  |
|                      | 544-P10275        | C09       | 61 X 140         | 3.30     | -8,540     | \$281.82-   |          |  |
|                      | 544-P10276        | C09       | 125 X 500        | 3.30     | -62,500    | \$2,062.50- |          |  |
|                      | 544-P10605        | C09       | 66 X 500         | 3.30     | -33,000    | \$1,089.00- |          |  |
|                      | 544-P10636        | C09       | 100 X 500        | 3.30     | -50,000    | \$1,650.00- |          |  |
|                      | 544-P10641        | C09       | 140 X 140        | 3.30     | -19,600    | \$646.80-   |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                  |          |            | \$6,136.68- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-------------------|-----------|-----------------|----------|------------|--------------|----------|--|
| 01125-006            | HYDROCHLORIC ACID | 22 BE     | *               | LIQ      | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#             | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10284        | C09       | 22600G DILUTION | 3.61     | -96,700    | \$3,490.87-  | 13116501 |  |
|                      | 544-P10284        | C09       | 2260G DILUTION  | 3.61     | -96,700    | \$3,490.87-  |          |  |
|                      | 544-P10672        | CSH       | DILUTION        | 3.61     | -59,868    | \$2,161.23-  |          |  |
|                      | 544-P10672        | CSH       | DILUTION        | 3.61     | -59,868    | \$2,161.23-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                 |          |            | \$11,304.20- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-------------------|-----------|-----------------------|----------|------------|------------|-------|--|
| 01125-012            | HYDROCHLORIC ACID | 20 BE     | MCKS                  | LIQ      | 015 GL CBY | EA         |       |  |
| TYP                  | REF-#             | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| INT                  |                   | CUI       | VALVE CLEANING 3 PIKE | 8.87     | -4         | \$35.48-   | 73550 |  |
| NET AMOUNT ADJUSTED: |                   |           |                       |          |            | \$35.48-   |       |  |

| PROD-CD   | PROD-NAME        | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |          |  |
|-----------|------------------|-----------|-----------------------|----------|------------|------------|----------|--|
| 01143-002 | SODIUM GLUCONATE |           | *                     | FINE     | 050 LB BAG | EA         |          |  |
| TYP       | REF-#            | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK       | 544-P10291       | C09       | ANH BUSCH W16266      | 28.62    | -20        | \$572.40-  | 13116501 |  |
|           | 544-P10324       | C09       | INT EXT W16341        | 28.62    | -16        | \$457.92-  |          |  |
|           | 544-P10332       | C09       | MILLER BREWING W16320 | 28.62    | -7         | \$200.34-  |          |  |
|           | 544-P10434       | C09       | MILLER BREWING W16322 | 28.62    | -7         | \$200.34-  |          |  |
|           | 544-P10480       | C09       | INTL EXT W16530       | 28.62    | -16        | \$457.92-  |          |  |
|           | 544-P10523       | C09       | MILLER BREWING        | 28.62    | -7         | \$200.34-  |          |  |
|           | 544-P10647       | C09       | MILLER BREW W16727    | 28.62    | -7         | \$200.34-  |          |  |
|           | 544-P10649       | CSH       | MILLER BREWING W16729 | 28.62    | -7         | \$200.34-  |          |  |

MCK0062186

DATE: 03/30/85 TIME: 10:53:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                |       |     |           |
|------------|-----|----------------|-------|-----|-----------|
| 544-P10650 | CO9 | BUSCH W16744   | 28.62 | -20 | \$572.40- |
| 544-P10663 | CO9 | INT EXT W16760 | 28.62 | -16 | \$457.92- |

NET AMOUNT ADJUSTED: \$3,520.26-

| PROD-CD   | PROD-NAME                | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|--------------------------|-----------|-----------------------|----------|------------|------------|-------|--|
| 01154-007 | SODIUM SULFATE ANHYDROUS |           | MCKS                  | GRAN     | 100 LB BAG | EA         |       |  |
| TYP       | REF-#                    | OPID      | REASON                | AVG-COST | QTY-ADJST  | AMT-ADJST  | GL #  |  |
| OH0       |                          | CUI       | FROM WRNG P.C. P10384 | 7.37     | +479       | \$3,530.23 | 59417 |  |

NET AMOUNT ADJUSTED: \$3,530.23

| PROD-CD   | PROD-NAME                | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |          |  |
|-----------|--------------------------|-----------|-------------------|----------|------------|-------------|----------|--|
| 01154-010 | SODIUM SULFATE ANHYDROUS | ANHYD     | *                 | GRAN     | 001 LB BLK | LB          |          |  |
| TYP       | REF-#                    | OPID      | REASON            | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK       | 544-P10383               | CO9       | KMCX172/2000X50   | 6.09     | -51,183    | \$3,117.04- | 13116501 |  |
|           | 544-P10383               | CO9       | KMCX172/2000X50   | 6.09     | -51,184    | \$3,117.11- |          |  |
|           | 544-P10384               | CO9       | RCKMCX172/479X100 | 6.09     | -50,267    | \$3,061.26- |          |  |
|           | 544-P10519               | CO9       | 800X50            | 6.09     | -42,366    | \$2,580.09- |          |  |

NET AMOUNT ADJUSTED: \$11,875.50-

| PROD-CD   | PROD-NAME                | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |       |  |
|-----------|--------------------------|-----------|-----------------------|----------|------------|------------|-------|--|
| 01154-011 | SODIUM SULFATE ANHYDROUS |           | MCKS                  | GRAN     | 050 LB BAG | EA         |       |  |
| TYP       | REF-#                    | OPID      | REASON                | AVG-COST | QTY-ADJST  | AMT-ADJST  | GL #  |  |
| OH0       |                          | CUI       | FROM WRNG P.C. P10519 | 3.80     | +800       | \$3,040.00 | 59417 |  |
|           |                          | CUI       | FROM WRNG P.C. P10383 | 3.80     | +2,000     | \$7,600.00 |       |  |

NET AMOUNT ADJUSTED: \$10,640.00

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM          |          |  |
|-----------|-----------------|-----------|--------|----------|------------|-------------|----------|--|
| 01158-027 | SODIUM SILICATE | N         | *      | LIQ      | 001 LB BLK | LB          |          |  |
| TYP       | REF-#           | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK       | 544-P10340      | CO9       | 73X635 | 6.60     | -46,540    | \$3,071.64- | 13116501 |  |

NET AMOUNT ADJUSTED: \$3,071.64-

| PROD-CD   | PROD-NAME           | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM        |       |  |
|-----------|---------------------|-----------|-------------------|----------|------------|-----------|-------|--|
| 01162-001 | METHYL ETHYL KETONE |           | *                 | LIQ      | 001 GL BLK | LB        |       |  |
| TYP       | REF-#               | OPID      | REASON            | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #  |  |
| OH0       |                     | CUI       | MTL LOSS-C EXPLTN | 29.53    | -1,548     | \$457.12- | 59417 |  |

NET AMOUNT ADJUSTED: \$457.12-

| TYP | REF-#      | OPID | REASON              | AVG-COST | QTY-ADJST | AMT-ADJST   | GL #     |
|-----|------------|------|---------------------|----------|-----------|-------------|----------|
| RPK | 544-P10301 | CO9  | WESTERN SPEC W16312 | 29.53    | -4,127    | \$1,218.70- | 13116501 |
|     | 544-P10302 | CO9  | WESTERN SPEC W16312 | 29.53    | -4,543    | \$1,341.55- |          |

MCK0062187

DATE: 03/30/85 TIME: 10:53:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G05

03/85

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                     |       |        |             |
|------------|-----|---------------------|-------|--------|-------------|
| 544-PI0444 | CO9 | WEST SPEC W16486    | 29.53 | -4,999 | \$1,476.20- |
| 544-PI0446 | CO9 | WESTERN SPEC W16487 | 29.53 | -3,295 | \$973.01-   |
| 544-PI0591 | CO9 | WEST SPEC W16683    | 29.53 | -4,543 | \$1,341.55- |
| 544-PI0592 | CO9 | WEST SPEC W16683    | 29.53 | -3,355 | \$990.73-   |

NET AMOUNT ADJUSTED: \$7,341.74-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM           |          |  |
|-----------|-----------------|-----------|----------|----------|---------------|--------------|----------|--|
| 01172-001 | PHOSPHORIC ACID | 75%       | *        | LIQ      | 001 GL BLK LB |              |          |  |
| TYP       | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK       | 544-PI0346      | CUI       | 65 X 700 | 26.62    | -45,500       | \$12,112.10- | 13116501 |  |
|           | 544-PI0621      | CSH       | 20 X 200 | 26.62    | -4,000        | \$1,064.80-  |          |  |

NET AMOUNT ADJUSTED: \$13,176.90-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|-----------------|-----------|----------|----------|---------------|-------------|----------|--|
| 01172-003 | PHOSPHORIC ACID | 85%       | *        | LIQ      | 001 LB BLK LB |             |          |  |
| TYP       | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-PI0418      | CO9       | 20 X 700 | 30.86    | -13,970       | \$4,311.14- | 13116501 |  |
|           | 544-PI0419      | CO9       | 30 X 200 | 30.86    | -5,970        | \$1,842.34- |          |  |

NET AMOUNT ADJUSTED: \$6,153.48-

| PROD-CD   | PROD-NAME      | QUALIFIER | GRAD               | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|----------------|-----------|--------------------|----------|---------------|-------------|----------|--|
| 01174-014 | SODIUM NITRITE | FREE FLOW | *                  | GRAN     | 100 LB BAG EA |             |          |  |
| TYP       | REF-#          | OPID      | REASON             | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-PI0251     | CO9       | NL TREATING W16248 | 40.27    | -182          | \$7,329.14- | 13116501 |  |
|           | 544-PI0375     | CO9       | NL TREAT W16399    | 40.27    | -166          | \$6,684.82- |          |  |
|           | 544-PI0485     | CO9       | NL TREATING W16501 | 40.27    | -181          | \$7,288.87- |          |  |

NET AMOUNT ADJUSTED: \$21,302.83-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM         |          |  |
|-----------|-------------|-----------|----------|----------|---------------|------------|----------|--|
| 01189-001 | NITRIC ACID | 42 BE     | *        | LIQ      | 001 GL BLK LB |            |          |  |
| TYP       | REF-#       | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK       | 544-PI0341  | CO9       | 38 X 170 | 8.82     | -6,460        | \$569.77-  | 13116501 |  |

NET AMOUNT ADJUSTED: \$569.77-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|-------------|-----------|-------------------|----------|---------------|------------|-------|--|
| 01189-013 | NITRIC ACID | 38 BE     | MCKS              | LIQ      | 008 GL RDM EA |            |       |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| INT       |             | CUI       | VALVE RECON. PIKE | 8.87     | -1            | \$8.87-    | 73550 |  |

NET AMOUNT ADJUSTED: \$8.87-

MCK0062188

PGM: CK02L21P VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 21  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME            | QUALIFIER  | GRAD             | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|----------------------|------------|------------------|----------|------------|------------|----------|--|
| 01193-005            | GLYCOL ETHER ACETATE | CELLOSOLVE | MCKS             | LIQ      | 055 GL     | DRM EA     |          |  |
| TYP                  | REF-#                | OPID       | REASON           | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P10473           | C09        | WHITTAKER W16505 | 261.57   | -1         | \$261.57-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |                      |            |                  |          |            | \$261.57-  |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|-------------------|-----------|---------------|----------|------------|------------|----------|--|
| 01212-005            | PERCHLOROETHYLENE |           | *             | LIQ      | 001 LB     | BLK LB     |          |  |
| TYP                  | REF-#             | OPID      | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P10562        | C09       | FLOKEM W16623 | 26.47    | -1,414     | \$374.29-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |           |               |          |            | \$374.29-  |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|--------------------|-----------|---------------|----------|------------|-------------|----------|--|
| 01229-003            | METHYLENE CHLORIDE |           | *             | LIQ      | 001 GL     | BLK LB      |          |  |
| TYP                  | REF-#              | OPID      | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10493         | C09       | 5 X 600       | 25.46    | -3,060     | \$779.08-   | 13116501 |  |
|                      | 544-P10562         | C09       | FLOKEM W16623 | 25.46    | -2,212     | \$563.18-   |          |  |
| NET AMOUNT ADJUSTED: |                    |           |               |          |            | \$1,342.26- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|---------------------|----------|------------|-------------|----------|--|
| 01233-001            | XYLENE     |           | *                   | LIQ      | 001 GL     | BLK LB      |          |  |
| TYP                  | REF-#      | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10333 | C09       | WESTERN SPEC W16358 | 21.51    | -435       | \$93.57-    | 13116501 |  |
|                      | 544-P10342 | C09       | 50 X 390            | 21.51    | -19,890    | \$4,278.34- |          |  |
|                      | 544-P10445 | C09       | WEST SPEC W16486    | 21.51    | -384       | \$82.60-    |          |  |
| NET AMOUNT ADJUSTED: |            |           |                     |          |            | \$4,454.51- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|---------------------|----------|------------|-------------|----------|--|
| 01236-002            | TOLUENE    |           | *                   | LIQ      | 001 GL     | BLK LB      |          |  |
| TYP                  | REF-#      | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10302 | C09       | WESTERN SPEC W16312 | 18.67    | -6,424     | \$1,199.36- | 13116501 |  |
|                      | 544-P10333 | C09       | WESTERN SPEC W16358 | 18.67    | -2,175     | \$406.07-   |          |  |
|                      | 544-P10444 | C09       | WEST SPEC W16486    | 18.67    | -7,062     | \$1,318.48- |          |  |
|                      | 544-P10445 | C09       | WEST SPEC W16486    | 18.67    | -1,450     | \$270.72-   |          |  |
|                      | 544-P10591 | C09       | WEST SPEC W16683    | 18.67    | -6,424     | \$1,199.36- |          |  |
| NET AMOUNT ADJUSTED: |            |           |                     |          |            | \$4,393.99- |          |  |

MCK0062189

PGM: CK02L21P VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 22  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM        |          |  |
|----------------------|------------|-----------|------------------|----------|------------|-----------|----------|--|
| 01236-004            | TOLUENE    |           | MCKS             | LIQ      | 054 GL     | DRM EA    |          |  |
| TYP                  | REF-#      | OPID      | REASON           | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |  |
| RPK                  | 544-P10445 | C09       | WEST SPEC W16486 | 93.77    | -1         | \$93.77-  | 13116501 |  |
|                      | 544-P10473 | C09       | WHITTAKER W16505 | 93.77    | -4         | \$375.08- |          |  |
| NET AMOUNT ADJUSTED: |            |           |                  |          |            | \$468.85- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-------------------|-----------|---------------------|----------|------------|-------------|----------|--|
| 01238-001            | ISOPROPYL ALCOHOL | 99%       | *                   | LIQ      | 001 LB     | BLK LB      |          |  |
| TYP                  | REF-#             | OPID      | REASON              | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P10302        | C09       | WESTERN SPEC W16312 | 26.83    | -2,395     | \$642.58-   | 13116501 |  |
|                      | 544-P10444        | C09       | WEST SPEC W16486    | 26.83    | -2,639     | \$708.04-   |          |  |
|                      | 544-P10479        | C09       | 50 X 355            | 26.83    | -18,105    | \$4,857.57- |          |  |
|                      | 544-P10591        | C09       | WEST SPEC W16683    | 26.83    | -2,402     | \$644.46-   |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                     |          |            | \$6,852.65- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD   | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------|-----------|--------|----------|------------|--------------|----------|--|
| 01241-003            | MORPHOLINE |           | *      | LIQ      | 001 GL     | BLK LB       |          |  |
| TYP                  | REF-#      | OPID      | REASON | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P10414 | C09       | 70X460 | 86.95    | -32,530    | \$28,284.84- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |        |          |            | \$28,284.84- |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-------------|-----------|----------|----------|------------|--------------|----------|--|
| 01242-003            | FORMIC ACID | 90%       | *        | LIQ      | 001 GL     | BLK LB       |          |  |
| TYP                  | REF-#       | OPID      | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| OHD                  |             | CUI       | MTL GAIN | 37.66    | +251       | \$94.53      | 59417    |  |
| NET AMOUNT ADJUSTED: |             |           |          |          |            | \$94.53      |          |  |
| TYP                  | REF-#       | OPID      | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P10335  | C09       | 67 X 533 | 37.66    | -35,711    | \$13,448.76- | 13116501 |  |
| NET AMOUNT ADJUSTED: |             |           |          |          |            | \$13,448.76- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------|-----------|----------|----------|------------|--------------|----------|--|
| 01245-011            | TRIETHANOLAMINE | 85%       | *        | LIQ      | 001 LB     | BLK LB       |          |  |
| TYP                  | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P10322      | C09       | 57 X 510 | 36.79    | -29,240    | \$10,757.40- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |          |          |            | \$10,757.40- |          |  |

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DATE: 03/30/85 TIME: 10:53:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|--------------------|-----------|----------|----------|------------|-------------|----------|--|
| 01255-001            | TRIETHYLENE GLYCOL |           | *        | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#              | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10633         | C09       | 24 X 520 | 32.88    | -12,710    | \$4,179.05- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                    |           |          |          |            | \$4,179.05- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER  | GRAD              | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------------------|------------|-------------------|----------|------------|------------|-------|--|
| 01260-003            | 1,1,1 TRICHLOROETHANE | AEROTHN TT | MSS               | LIQ      | 001 GL BLK | LB         |       |  |
| TYP                  | REF-#                 | OPID       | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OHD                  |                       | CUI        | S/B WT VAR P10300 | 38.67    | -510       | \$197.22-  | 59417 |  |
| NET AMOUNT ADJUSTED: |                       |            |                   |          |            | \$197.22-  |       |  |

| TYP                  | REF-#      | OPID | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|----------|----------|------------|--------------|----------|
| RPK                  | 544-P10300 | C09  | 75 X 592 | 38.67    | -44,400    | \$17,169.48- | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |          |          |            | \$17,169.48- |          |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|----------|----------|------------|--------------|----------|--|
| 01260-009            | 1,1,1 TRICHLOROETHANE | CHLORO SM | MSS      | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10422            | C09       | 50 X 592 | 37.68    | -30,192    | \$11,376.35- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                       |           |          |          |            | \$11,376.35- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|-------------------------|----------|------------|--------------|----------|--|
| 01260-022            | 1,1,1 TRICHLOROETHANE | VDG       | *                       | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10415            | CUG       | VULCAN VDG INTO SM TANK | 37.39    | -33,460    | \$12,510.69- | 13116501 |  |
|                      | 544-P10501            | CUI       | VULCAN=GEN.PURPOSE GR.  | 37.39    | -44,880    | \$16,780.63- |          |  |
|                      | 544-P10616            | CUI       | FOR SWIFT               | 37.39    | -13,240    | \$4,950.44-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |                         |          |            | \$34,241.76- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------|-----------|----------|----------|------------|--------------|----------|--|
| 01265-001            | STYRENE MONOMER |           | *        | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#           | OPID      | REASON   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10343      | CUI       | 57 X 410 | 33.19    | -23,660    | \$7,852.75-  | 13116501 |  |
|                      | 544-P10514      | C09       | 40X410   | 33.19    | -16,520    | \$5,482.99-  |          |  |
| NET AMOUNT ADJUSTED: |                 |           |          |          |            | \$13,335.74- |          |  |

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DATE: 03/30/85 TIME: 10:53:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 03/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                      | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|--------------|-----------|---------------------------|----------|---------------|--------------|----------|--|
| 01282-020            | CAUSTIC SODA |           | *                         | BEAD     | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#        | OPID      | REASON                    | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P09485   | C09       | 28X500(BORROWED F/FLOKEM) | 18.88    | -14,000       | \$2,643.20-  | 13116501 |  |
|                      | 544-P10307   | CUI       | 80 - FLOKEM               | 18.88    | -40,000       | \$7,552.00-  |          |  |
|                      | 544-P10323   | C09       | 10X3000/CARLIN            | 18.88    | -30,000       | \$5,664.00-  |          |  |
|                      | 544-P10464   | C09       | 20X500FIBRE DRS           | 18.88    | -10,000       | \$1,888.00-  |          |  |
|                      | 544-P10466   | C09       | FLOKEM 80X500             | 18.88    | -40,000       | \$7,552.00-  |          |  |
|                      | 544-P10494   | C09       | 3XBINS CARLIN W16338      | 18.88    | -1            | \$0.19-      |          |  |
|                      | 544-P10610   | C09       | FLOKEM W16710/VMC51378    | 18.88    | -30,000       | \$5,664.00-  |          |  |
| NET AMOUNT ADJUSTED: |              |           |                           |          |               | \$30,963.39- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|--------------|-----------|----------------------|----------|---------------|------------|-------|--|
| 01282-051            | CAUSTIC SODA | CONSIGNED | *                    | BEAD     | 001 LB BLK LB |            |       |  |
| TYP                  | REF-#        | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH0                  |              | CUI       | VMC51376-MCK USE     | 0.01     | -80,000       | \$8.00-    | 59417 |  |
|                      |              | CUI       | MTL GAIN-VULCAN SILO | 0.01     | +20,001       | \$2.00     |       |  |
| NET AMOUNT ADJUSTED: |              |           |                      |          |               | \$6.00-    |       |  |

| TYP                  | REF-#      | OPID | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |
|----------------------|------------|------|------------------------|----------|------------|------------|-------|
| RCS                  | 544-P10226 | C09  | VMC51374/DIV WYANDOTTE | 0.01     | -42,490    | \$4.25-    | 12492 |
|                      | 544-P10226 | C09  | 51370/ECON LABS        | 0.01     | -39,870    | \$3.99-    |       |
|                      | 544-P10520 | C09  | VMC51371               | 0.01     | -37,150    | \$3.72-    |       |
| NET AMOUNT ADJUSTED: |            |      |                        |          |            | \$11.96-   |       |

| TYP                  | REF-#      | OPID | REASON                   | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
|----------------------|------------|------|--------------------------|----------|------------|------------|----------|
| RPK                  | 544-P10186 | C09  | VMC51369/80X500/ICP WEST | 0.01     | -40,000    | \$4.00-    | 13116501 |
|                      | 544-P10249 | C09  | VMC51372/OAKITE/15XBINS  | 0.01     | -45,000    | \$4.50-    |          |
|                      | 544-P10505 | C09  | OAKITE/VMC51375          | 0.01     | -45,000    | \$4.50-    |          |
| NET AMOUNT ADJUSTED: |            |      |                          |          |            | \$13.00-   |          |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|--------------|-----------|-----------------|----------|---------------|------------|-------|--|
| 01282-053            | CAUSTIC SODA | CONSIGNED | CUST            | BEAD     | 001 EA PTK EA |            |       |  |
| TYP                  | REF-#        | OPID      | REASON          | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P10249   | C09       | VMC51376        | 10.15    | -15           | \$152.25-  | 12492 |  |
|                      | 544-P10249   | C09       | VMC51375/OAKITE | 10.15    | -15           | \$152.25-  |       |  |
| NET AMOUNT ADJUSTED: |              |           |                 |          |               | \$304.50-  |       |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------|-----------|---------------|----------|---------------|-------------|----------|--|
| 01335-001            | TRITON X-45 |           | *             | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#       | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10280  | C09       | PART DRM 230# | 66.03    | -4,460        | \$2,944.94- | 13116501 |  |
| NET AMOUNT ADJUSTED: |             |           |               |          |               | \$2,944.94- |          |  |

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DATE: 03/30/85 TIME: 10:53:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G05

03/85

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM           |          |  |  |
|----------------------|---------------|-----------|--------------|----------|---------------|--------------|----------|--|--|
| 01361-002            | SULFURIC ACID | 96Z       | *            | LIQ      | 001 LB BLK LB |              |          |  |  |
| TYP                  | REF-#         | OPID      | REASON       | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |  |
| RPK                  | 544-P10372    | CUG       |              | 2.31     | -99,000       | \$2,286.90-  | 13116501 |  |  |
|                      | 544-P10380    | CO9       | 100 X 700    | 2.31     | -70,000       | \$1,617.00-  |          |  |  |
|                      | 544-P10380    | CUI       | 54 X 700     | 2.31     | -37,800       | \$873.18-    |          |  |  |
|                      | 544-P10484    | CUI       |              | 2.31     | -99,000       | \$2,286.90-  |          |  |  |
|                      | 544-P10492    | CO9       | 168X225      | 2.31     | -37,800       | \$873.18-    |          |  |  |
|                      | 544-P10594    | CO9       | 112X700      | 2.31     | -78,400       | \$1,811.04-  |          |  |  |
|                      | 544-P10615    | CUI       | TRANSFR ONLY | 2.31     | -99,999       | \$2,309.98-  |          |  |  |
| NET AMOUNT ADJUSTED: |               |           |              |          |               | \$12,058.18- |          |  |  |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM          |       |  |  |
|----------------------|---------------|-----------|---------------------|----------|---------------|-------------|-------|--|--|
| 01361-013            | SULFURIC ACID | 66 BE     | MCKS                | LIQ      | 055 GL RDM EA |             |       |  |  |
| TYP                  | REF-#         | OPID      | REASON              | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |  |
| OHD                  |               | CUI       | RCD WRNG SKU P10490 | 33.70    | -168          | \$5,661.60- | 59417 |  |  |
| NET AMOUNT ADJUSTED: |               |           |                     |          |               | \$5,661.60- |       |  |  |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|---------------|-----------|-----------------|----------|---------------|------------|-------|--|--|
| 01361-014            | SULFURIC ACID | 66 BE     | MCKS            | LIQ      | 015 GL CBY EA |            |       |  |  |
| TYP                  | REF-#         | OPID      | REASON          | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHD                  |               | CUI       | CRCT SKU P10490 | 11.17    | +168          | \$1,876.56 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |               |           |                 |          |               | \$1,876.56 |       |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-----------------|-----------|--------------------------|----------|---------------|-------------|----------|--|--|
| 01369-001            | N-BUTYL ALCOHOL |           | *                        | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#           | OPID      | REASON                   | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P10295      | CO9       | 2 X 374                  | 28.08    | -748          | \$210.04-   | 13116501 |  |  |
|                      | 544-P10302      | CO9       | WESTERN SPECIALTY W16312 | 28.08    | -2,632        | \$739.07-   |          |  |  |
|                      | 544-P10443      | CO9       | 2 X 374                  | 28.08    | -748          | \$210.04-   |          |  |  |
|                      | 544-P10444      | CO9       | WEST SPEC W16486         | 28.08    | -2,652        | \$744.68-   |          |  |  |
|                      | 544-P10589      | CO9       | 11X374                   | 28.08    | -4,114        | \$1,155.21- |          |  |  |
|                      | 544-P10591      | CO9       | WEST SPEC W16683         | 28.08    | -2,646        | \$743.00-   |          |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                          |          |               | \$3,802.04- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM         |          |  |  |
|----------------------|-----------------|-----------|------------------|----------|---------------|------------|----------|--|--|
| 01369-002            | N-BUTYL ALCOHOL |           | MCKS             | LIQ      | 055 GL DRM EA |            |          |  |  |
| TYP                  | REF-#           | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |  |
| RPK                  | 544-P10473      | CO9       | WHITTAKER W16505 | 130.06   | -1            | \$130.06-  | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                  |          |               | \$130.06-  |          |  |  |

*Wash. because I 1000  
checked at 11.64*

*Cost F.O.R.*

MCK0062193

DATE: 03/30/85 TIME: 10:53:29 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 03/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME            | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM         |       |
|-----------|----------------------|-----------|----------------------|----------|---------------|------------|-------|
| 01377-001 | CAUSTIC SODA, LIQUID | 50%       | *                    | LIQ      | 001 GL BLK LB |            |       |
| TYP       | REF-#                | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |
| OKD       |                      | CUI       | REVSE DUP DRW P10392 | 8.35     | +23,000       | \$1,920.50 | 59417 |

NET AMOUNT ADJUSTED: \$1,920.50

| TYP | REF-#      | OPID | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|-----------------------|----------|------------|-------------|----------|
| RPK | 544-P10283 | C09  | 200 X 680             | 8.35     | -69,789    | \$5,827.38- | 13116501 |
|     | 544-P10283 | C09  | 35X680/PARTIAL        | 8.35     | -12,213    | \$1,019.79- |          |
|     | 544-P10291 | C09  | ANH BUSCH W16266      | 8.35     | -23,718    | \$1,980.45- |          |
|     | 544-P10324 | C09  | INT EXT W16341        | 8.35     | -23,204    | \$1,937.53- |          |
|     | 544-P10328 | CUI  | 150 X 680 -STEEL      | 8.35     | -52,342    | \$4,370.56- |          |
|     | 544-P10332 | C09  | MILLER BREWING W16320 | 8.35     | -18,191    | \$1,518.95- |          |
|     | 544-P10373 | C09  | MC DOUGLAS W16394     | 8.35     | -1,937     | \$161.74-   |          |
|     | 544-P10374 | C09  | NI IND W16360         | 8.35     | -21,901    | \$1,828.73- |          |
|     | 544-P10392 | C09  | 40 X 575              | 8.35     | -23,000    | \$1,920.50- |          |
|     | 544-P10392 | C09  | 40 X 575              | 8.35     | -11,520    | \$961.92-   |          |
|     | 544-P10394 | C09  | MCDONNELL DOUG W16422 | 8.35     | -1,693     | \$141.37-   |          |
|     | 544-P10404 | C09  | 10400G                | 8.35     | -19,618    | \$1,638.10- |          |
|     | 544-P10409 | C09  | 10400G DILUTION       | 8.35     | -19,085    | \$1,593.60- |          |
|     | 544-P10411 | C09  | GENL MOTORS W16418    | 8.35     | -10,035    | \$837.92-   |          |
|     | 544-P10434 | C09  | MILLER BREWING W16322 | 8.35     | -18,525    | \$1,546.84- |          |
|     | 544-P10480 | C09  | INTL EXTR W16530      | 8.35     | -18,345    | \$1,531.81- |          |
|     | 544-P10491 | C09  | 122X680               | 8.35     | -42,572    | \$3,554.76- |          |
|     | 544-P10491 | C09  | 76 X 680              | 8.35     | -26,520    | \$2,214.42- |          |
|     | 544-P10503 | C09  | NORRIS IND W16499     | 8.35     | -21,901    | \$1,828.73- |          |
|     | 544-P10523 | C09  | MILLER BREWING        | 8.35     | -18,838    | \$1,572.97- |          |
|     | 544-P10530 | C09  | CUT CAUSTIC           | 8.35     | -19,351    | \$1,615.81- |          |
|     | 544-P10550 | C09  | MCDONNELL DOUG W16635 | 8.35     | -1,586     | \$132.43-   |          |
|     | 544-P10561 | C09  | NI IND W16588         | 8.35     | -21,645    | \$1,807.36- |          |
|     | 544-P10620 | CSH  | 242 X 680             | 8.35     | -84,445    | \$7,051.16- |          |
|     | 544-P10627 | C09  | GENERAL FOODS W16711  | 8.35     | -13,652    | \$1,139.94- |          |
|     | 544-P10647 | C09  | MILLER BREW W16727    | 8.35     | -18,576    | \$1,551.10- |          |
|     | 544-P10648 | C09  | NI IND W16708         | 8.35     | -21,901    | \$1,828.73- |          |
|     | 544-P10649 | C09  | MILLER BREWING W16729 | 8.35     | -18,038    | \$1,506.17- |          |
|     | 544-P10650 | C09  | BUSCH W16744          | 8.35     | -23,267    | \$1,942.79- |          |
|     | 544-P10660 | C09  | MCDONNELL DOUG W16746 | 8.35     | -1,668     | \$139.28-   |          |
|     | 544-P10663 | C09  | INT EXT W16760        | 8.35     | -17,719    | \$1,479.54- |          |
|     | 544-P10668 | C09  | ITT CANNON W16706     | 8.35     | -17,482    | \$1,459.75- |          |
|     | 544-P10680 | CUI  | INTL EXT              | 8.35     | -250       | \$20.88-    |          |

NET AMOUNT ADJUSTED: \$59,663.01-

| PROD-CD   | PROD-NAME            | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM          |       |
|-----------|----------------------|-----------|-----------------------|----------|---------------|-------------|-------|
| 01377-005 | CAUSTIC SODA, LIQUID | 50%       | MCKS                  | LIQ      | 055 GL RDM EA |             |       |
| TYP       | REF-#                | OPID      | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |
| OKD       |                      | CUI       | DBL RCT-PART'L P10238 | 47.98    | -35           | \$1,679.30- | 59417 |

NET AMOUNT ADJUSTED: \$1,679.30-

MCK0062194

PGM: CK02L21P VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 27  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| TYP                  | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJST | AMT-ADJST | GL #     |
|----------------------|------------|------|-----------------|----------|-----------|-----------|----------|
| RPK                  | 544-P10590 | CO9  | NL TREAT W16674 | 47.98    | -1        | \$47.98-  | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |                 |          |           | \$47.98-  |          |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM        |          |
|----------------------|----------------------|-----------|--------------------|----------|------------|-----------|----------|
| 01377-006            | CAUSTIC SODA, LIQUID | 50%       | MCKS               | LIQ      | 055 GL DRM | EA        |          |
| TYP                  | REF-#                | OPID      | REASON             | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |
| RPK                  | 544-P10251           | CO9       | NL TREATING W16248 | 51.31    | -1         | \$51.31-  | 13116501 |
|                      | 544-P10375           | CO9       | NL TREAT W16399    | 51.31    | -1         | \$51.31-  |          |
|                      | 544-P10485           | CO9       | NL TREAT W16501    | 51.31    | -1         | \$51.31-  |          |
| NET AMOUNT ADJUSTED: |                      |           |                    |          |            | \$153.93- |          |

| PROD-CD              | PROD-NAME            | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM          |          |
|----------------------|----------------------|-----------|--------------------------|----------|------------|-------------|----------|
| 01377-047            | CAUSTIC SODA, LIQUID | 18%       | MCKS                     | LIQ      | 001 GL BLK | LB          |          |
| TYP                  | REF-#                | OPID      | REASON                   | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |
| RPK                  | 544-P10065           | CO9       | 84 X 550                 | 1.60     | -39,732    | \$635.71-   | 13116501 |
|                      | 544-P10304           | CO9       | NI IND W16299            | 1.60     | -35,845    | \$573.52-   |          |
|                      | 544-P10400           | CO9       | 83X550                   | 1.60     | -39,259    | \$628.14-   |          |
|                      | 544-P10457           | CO9       | NI IND W16498            | 1.60     | -33,437    | \$534.99-   |          |
|                      | 544-P10600           | CO9       | NI IND W16641            | 1.60     | -39,044    | \$624.70-   |          |
|                      | 544-P10607           | CO9       | REDWOOD CY TRTMNT W16672 | 1.60     | -38,795    | \$620.72-   |          |
| NET AMOUNT ADJUSTED: |                      |           |                          |          |            | \$3,617.78- |          |

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD     | FORM     | -PACKAGE-- | UM           |          |
|----------------------|------------------|------------|----------|----------|------------|--------------|----------|
| 01391-005            | CHELATING AGENTS | VERSNE 100 | *        | LIQ      | 001 GL BLK | LB           |          |
| TYP                  | REF-#            | OPID       | REASON   | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |
| RPK                  | 544-P10339       | CO9        | 73 X 600 | 30.31    | -43,610    | \$13,218.19- | 13116501 |
| NET AMOUNT ADJUSTED: |                  |            |          |          |            | \$13,218.19- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |
|----------------------|------------|-----------|----------------|----------|------------|-------------|----------|
| 01482-001            | AMBITROL   | CN        | *              | LIQ      | 055 GL DRM | EA          |          |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |
| RPK                  | 544-P10567 | CO9       | AEROCHEM 80/20 | 281.96   | -15        | \$4,229.40- | 13116501 |
| NET AMOUNT ADJUSTED: |            |           |                |          |            | \$4,229.40- |          |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM          |          |
|----------------------|------------------|-----------|------------------|----------|------------|-------------|----------|
| 01532-001            | ISOBUTYL ACETATE |           | *                | LIQ      | 001 GL BLK | LB          |          |
| TYP                  | REF-#            | OPID      | REASON           | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |
| RPK                  | 544-P10473       | CO9       | WHITTAKER W16505 | 37.61    | -7,049     | \$2,651.13- | 13116501 |
|                      | 544-P10474       | CO9       | 3 X 397          | 37.61    | -1,191     | \$447.94-   |          |
| NET AMOUNT ADJUSTED: |                  |           |                  |          |            | \$3,099.07- |          |

MCK0062195

DATE: 03/30/85 TIME: 10:53:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH

JOB: CN10J6 STEP: CN10G05

03/85

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|---------------------|----------|------------|-------------|----------|--|
| 01532-003            | ISOBUTYL ACETATE | 99%       | MCKS                | LIQ      | 055 GL DRN | EA          |          |  |
| TYP                  | REF-#            | OPID      | REASON              | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P10333       | C09       | WESTERN SPEC W16358 | 190.30   | -3         | \$570.90-   | 13116501 |  |
|                      | 544-P10445       | C09       | WEST SPEC W16486    | 190.30   | -3         | \$570.90-   |          |  |
| NET AMOUNT ADJUSTED: |                  |           |                     |          |            | \$1,141.80- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|---------------|----------|------------|--------------|----------|--|
| 01571-001            | CAUSTIC POTASH LIQUID | 50%       | *             | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON        | AVG-COST | QTY-ADJST  | AMT-ADJST    | GL #     |  |
| RPK                  | 544-P10405            | C09       | 50 X 660      | 16.31    | -29,700    | \$4,844.07-  | 13116501 |  |
|                      | 544-P10406            | C09       | 17X660        | 16.31    | -10,098    | \$1,646.98-  |          |  |
|                      | 544-P10470            | CUI       | CALGON-W16477 | 16.31    | -39,726    | \$6,479.31-  |          |  |
|                      | 544-P10619            | CUI       | 30 DR 45%     | 16.31    | -17,820    | \$2,906.44-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |               |          |            | \$15,876.80- |          |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|--------------------------|-----------|--------------------------|----------|------------|-------------|-------|--|
| 01667-002            | CAUSTIC SODA(GLUCONATED) | 50%       | *                        | LIQ      | 001 GL BLK | LB          |       |  |
| TYP                  | REF-#                    | OPID      | REASON                   | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #  |  |
| RCS                  | 544-P10291               | CUI       | RCV'D AS LIQ-S/B DRY WGT | 10.56    | -24,502    | \$2,587.41- | 12492 |  |
| NET AMOUNT ADJUSTED: |                          |           |                          |          |            | \$2,587.41- |       |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|---------------------|----------|------------|-------------|----------|--|
| 01675-001            | HEPTANES   |           | *                   | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON              | AVG-COST | QTY-ADJST  | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P10301 | C09       | WESTERN SPEC W16312 | 17.68    | -3,788     | \$669.72-   | 13116501 |  |
|                      | 544-P10302 | C09       | WESTERN SPEC W16312 | 17.68    | -8,987     | \$1,588.90- |          |  |
|                      | 544-P10333 | C09       | WESTERN SPEC W16358 | 17.68    | -3,696     | \$653.45-   |          |  |
|                      | 544-P10444 | C09       | WEST SPEC W16486    | 17.68    | -9,881     | \$1,746.96- |          |  |
|                      | 544-P10445 | C09       | WEST SPEC W16486    | 17.68    | -1,078     | \$190.59-   |          |  |
|                      | 544-P10446 | C09       | WESTERN SPEC W16487 | 17.68    | -3,295     | \$582.56-   |          |  |
|                      | 544-P10591 | C09       | WEST SPEC W16683    | 17.68    | -8,987     | \$1,588.90- |          |  |
|                      | 544-P10592 | C09       | WEST SPEC W16683    | 17.68    | -3,080     | \$544.54-   |          |  |
| NET AMOUNT ADJUSTED: |            |           |                     |          |            | \$7,565.62- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD             | FORM     | -PACKAGE-- | UM        |          |  |
|----------------------|------------|-----------|------------------|----------|------------|-----------|----------|--|
| 01675-002            | HEPTANES   |           | MCKS             | LIQ      | 055 GL DRN | EA        |          |  |
| TYP                  | REF-#      | OPID      | REASON           | AVG-COST | QTY-ADJST  | AMT-ADJST | GL #     |  |
| RPK                  | 544-P10445 | C09       | WEST SPEC W16486 | 82.43    | -6         | \$494.58- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                  |          |            | \$494.58- |          |  |

MCK0062196

PGM: CK02L2IP VER 01.4  
DATE: 03/30/85 TIME: 10:53:29

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

REPORT NO: CK02R25A PAGE: 29  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM        |          |  |
|----------------------|--------------|-----------|------------------|----------|---------------|-----------|----------|--|
| 01804-001            | MCKSOLV PX-3 |           | *                | LIQ      | 001 GL BLK LB |           |          |  |
| TYP                  | REF-#        | OPID      | REASON           | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #     |  |
| RPK                  | 544-P10473   | CO9       | WHITTAKER W16505 | 24.67    | -737          | \$181.82- | 13116501 |  |
|                      | 544-P10476   | CO9       | 7 X 409          | 24.67    | -2,863        | \$706.30- |          |  |
| NET AMOUNT ADJUSTED: |              |           |                  |          |               | \$888.12- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM        |          |  |
|----------------------|-----------------------|-----------|------------------|----------|---------------|-----------|----------|--|
| 01806-001            | MCKSOLV VM & P NAPTHA |           | *                | LIQ      | 001 GL BLK LB |           |          |  |
| TYP                  | REF-#                 | OPID      | REASON           | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #     |  |
| RPK                  | 544-P10473            | CO9       | WHITTAKER W16505 | 17.92    | -4,233        | \$758.55- | 13116501 |  |
|                      | 544-P10475            | CO9       | 1 X 347          | 17.92    | -347          | \$62.18-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |                  |          |               | \$820.73- |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM        |          |  |
|----------------------|-------------|-----------|-------------------|----------|---------------|-----------|----------|--|
| 02398-001            | LIME SLURRY | 40-42%    | *                 | LIQ      | 001 GL BLK LB |           |          |  |
| TYP                  | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #     |  |
| RPK                  | 544-P10374  | CO9       | NI IND W16360     | 1.61     | -3,871        | \$62.32-  | 13116501 |  |
|                      | 544-P10503  | CO9       | NORRIS IND W16499 | 1.61     | -5,101        | \$82.13-  |          |  |
|                      | 544-P10561  | CO9       | NI IND W16588     | 1.61     | -5,850        | \$94.19-  |          |  |
|                      | 544-P10648  | CO9       | NI IND W16708     | 1.61     | -4,981        | \$80.19-  |          |  |
|                      | 544-P10668  | CO9       | ITT CANNON W16706 | 1.61     | -4,033        | \$64.93-  |          |  |
| NET AMOUNT ADJUSTED: |             |           |                   |          |               | \$383.76- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|--------------|-----------|----------|----------|---------------|-------------|----------|--|
| 02716-001            | 140F SOLVENT |           | *        | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#        | OPID      | REASON   | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P10336   | CUI       | 35 X 370 | 18.41    | -13,209       | \$2,431.78- | 13116501 |  |
|                      | 544-P10478   | CUI       | 25 X 370 | 18.41    | -9,435        | \$1,736.98- |          |  |
| NET AMOUNT ADJUSTED: |              |           |          |          |               | \$4,168.76- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD         | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|--------------|----------|---------------|-------------|----------|--|
| 02719-001            | GLYCOL ETHER PM |           | MSS          | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON       | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P10344      | CUI       | 3 RECON DR.  | 35.53    | -1,260        | \$447.68-   | 13116501 |  |
|                      | 544-P10345      | CUI       | 18 NEW DRUMS | 35.53    | -7,660        | \$2,792.66- |          |  |
| NET AMOUNT ADJUSTED: |                 |           |              |          |               | \$3,240.34- |          |  |

MCK0062197

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02721-001            | GLYCOL ETHER DPM |           | MSS    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#            | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10516       | C09       | 35X435 | 35.30    | -15,520       | \$5,478.56- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |        |          |               | \$5,478.56- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD     | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|----------|----------|---------------|--------------|----------|--|
| 02755-013            | HYDROGEN PEROXIDE | 35% TECH  | MSS      | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON   | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10337        | CUI       | 59 X 500 | 22.23    | -29,500       | \$6,557.85-  | 13116501 |  |
|                      | 544-P10337        | C09       | 44 X 500 | 22.23    | -22,000       | \$4,890.60-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |          |          |               | \$11,448.45- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER  | GRAD    | FORM     | -PACKAGE--    | UM         |          |  |
|----------------------|-------------------|------------|---------|----------|---------------|------------|----------|--|
| 02755-015            | HYDROGEN PEROXIDE | 35% SUPR D | MSS     | LIQ      | 001 GL BLK LB |            |          |  |
| TYP                  | REF-#             | OPID       | REASON  | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P10287        | C09        | 1 X 500 | 31.93    | -500          | \$159.65-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |                   |            |         |          |               | \$159.65-  |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|---------------|----------|---------------|--------------|----------|--|
| 02755-017            | HYDROGEN PEROXIDE | 50% TECH  | MSS           | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON        | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P10286        | C09       | 35 X 500      | 33.36    | -17,500       | \$5,838.00-  | 13116501 |  |
|                      | 544-P10334        | C09       | 15 X 500 CUST | 33.36    | -7,500        | \$2,502.00-  |          |  |
|                      | 544-P10369        | C09       | BLEND         | 33.36    | -36,653       | \$12,227.44- |          |  |
|                      | 544-P10500        | C09       | 10X500        | 33.36    | -4,512        | \$1,505.20-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |               |          |               | \$22,072.64- |          |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------------------|-----------|----------------|----------|---------------|-------------|----------|--|
| 02758-001            | MINERAL SPIRITS, SHORT |           | *              | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                  | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10437             | C09       | 45 X 360       | 17.75    | -16,350       | \$2,902.13- | 13116501 |  |
|                      | 544-P10562             | C09       | FLOKEM W16623  | 17.75    | -3,408        | \$604.92-   |          |  |
|                      | 544-P10563             | C09       | 17 X 360       | 17.75    | -6,341        | \$1,125.53- |          |  |
|                      | 544-P10601             | C09       | 2 X 360/P10563 | 17.75    | -1            | \$0.18-     |          |  |
| NET AMOUNT ADJUSTED: |                        |           |                |          |               | \$4,632.76- |          |  |

MCK0062198

PGM: CK02L2IP VER 01.4

MCKESSON CORP - CHEMICAL GROUP

REPORT NO: CK02R25A PAGE: 31

DATE: 03/30/85 TIME: 10:53:29

MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
03/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME               | QUALIFIER | GRAD   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------------------|-----------|--------|----------|---------------|-------------|----------|--|
| 02760-001            | MINERAL SPIRITS,REGULAR |           | *      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#                   | OPID      | REASON | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P10564              | C09       | 12X350 | 17.54    | -4,230        | \$741.94-   | 13116501 |  |
|                      | 544-P10588              | C09       | 37X350 | 17.54    | -12,950       | \$2,271.43- |          |  |
| NET AMOUNT ADJUSTED: |                         |           |        |          |               | \$3,013.37- |          |  |

MCK0062199

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |              |      |         |             |
|------------|-----|--------------|------|---------|-------------|
| 544-P12160 | CTO | BLEACH BLEND | 7.68 | -13,068 | \$1,003.62- |
| 544-P12174 | CSH | 20 X 2000    | 7.68 | -40,000 | \$3,072.00- |
| 544-P12183 | CSH | 21 X 2000    | 7.68 | -42,000 | \$3,225.60- |
| 544-P12201 | CSH | 25 X 2000    | 7.68 | -46,850 | \$3,598.08- |
| 544-P12217 | CTO | BLEACH BLEND | 7.68 | -14,504 | \$1,113.91- |
| 544-P12220 | CSH | 26 X 2000    | 7.68 | -52,000 | \$3,993.60- |
| 544-P12221 | CSH | 24 X 2000    | 7.68 | -48,000 | \$3,686.40- |
| 544-P12227 | CSH | 28 X 2000    | 7.68 | -56,000 | \$4,300.80- |
| 544-P12292 | CSH | 17 X 2000    | 7.68 | -34,000 | \$2,611.20- |
| 544-P12294 | CSH | 11 X 2000    | 7.68 | -22,000 | \$1,689.60- |

NET AMOUNT ADJUSTED: \$79,593.52-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD                 | FORM     | -PACKAGE-- | UM          |       |  |
|-----------|-----------|-----------|----------------------|----------|------------|-------------|-------|--|
| 01011-004 | CHLORINE  |           | MCKS                 | GAS      | 150 LB CYL | EA          |       |  |
| TYP       | REF-#     | OPID      | REASON               | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OHD       |           | CUI       | C-EXPLANATION        | 26.72    | -150       | \$4,008.00- | 59417 |  |
|           |           | CUI       | REVS PREV OHD-S/B105 | 26.72    | +45        | \$1,202.40  |       |  |

NET AMOUNT ADJUSTED: \$2,805.60-

|     |            |      |                         |          |            |             |          |
|-----|------------|------|-------------------------|----------|------------|-------------|----------|
| TYP | REF-#      | OPID | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK | 544-P12201 | CSH  | FROM RECALL TO FILL TNS | 26.72    | -70        | \$1,870.40- | 13116501 |

NET AMOUNT ADJUSTED: \$1,870.40-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM         |          |  |
|-----------|------------|-----------|-------------------------|----------|------------|------------|----------|--|
| 01011-005 | CHLORINE   |           | MCKS                    | GAS      | 100 LB CYL | EA         |          |  |
| TYP       | REF-#      | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK       | 544-P12201 | CSH       | FROM RECALL TO FILL TNS | 18.99    | -35        | \$664.65-  | 13116501 |  |

NET AMOUNT ADJUSTED: \$664.65-

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE-- | UM          |          |  |
|-----------|-------------|-----------|-------------------|----------|------------|-------------|----------|--|
| 01013-001 | ACETIC ACID | GLACIAL   | *                 | LIQ      | 001 GL BLK | LB          |          |  |
| TYP       | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P12017  | CTO       | 4 X 345 GAL PTK   | 23.62    | -9,376     | \$2,214.61- | 13116501 |  |
|           | 544-P12056  | CTO       | 9 X 345 GAL PTK.  | 23.62    | -21,096    | \$4,982.88- |          |  |
|           | 544-P12132  | CTO       | 12 X 2930 PTK     | 23.62    | -28,128    | \$6,643.83- |          |  |
|           | 544-P12146  | CTO       | 25 X 110 CARBOYS  | 23.62    | -2,750     | \$649.55-   |          |  |
|           | 544-P12164  | CTO       | 50 X 450 DRUMS    | 23.62    | -18,000    | \$4,251.60- |          |  |
|           | 544-P12165  | CTO       | 50 X 450 DRUMS    | 23.62    | -22,500    | \$5,314.50- |          |  |
|           | 544-P12166  | CTO       | 18 X 110 CARBOYS  | 23.62    | -1,980     | \$467.68-   |          |  |
|           | 544-P12190  | CTO       | BLEND TO 80%      | 23.62    | -31,205    | \$7,370.62- |          |  |
|           | 544-P12205  | CTO       | 9 X 2930 BINS     | 23.62    | -21,096    | \$4,982.88- |          |  |
|           | 544-P12214  | CTO       | TECH BLEND W18790 | 23.62    | -1,267     | \$299.27-   |          |  |

NET AMOUNT ADJUSTED: \$37,177.42-

MCK0062267

DATE: 08/01/85 TIME: 01:58:40 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 07/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------|-----------|------------------------|----------|------------|--------------|----------|--|
| 01018-001            | ACETONE    |           | *                      | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#      | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11909 | CTO       | 104 X 357 DRUMS        | 20.29    | -37,871    | \$7,684.03-  | 13116501 |  |
|                      | 544-P12163 | CTO       | CH. COAT. BLEND W18844 | 20.29    | -1,178     | \$239.02-    |          |  |
|                      | 544-P12167 | CTO       | 100 X 357 DRUMS        | 20.29    | -36,414    | \$7,388.40-  |          |  |
| NET AMOUNT ADJUSTED: |            |           |                        |          |            | \$15,311.45- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                 | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|----------------------|----------|------------|-------------|----------|--|
| 01053-004            | N-BUTYL ACETATE | 99%       | MCKS                 | LIQ      | 055 GL DRM | EA          |          |  |
| TYP                  | REF-#           | OPID      | REASON               | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P12270      | CTO       | MAG PRO.BLEND W18910 | 187.12   | -11        | \$2,058.32- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |                      |          |            | \$2,058.32- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01060-001            | GLYCOL ETHER EE |           | MSS            | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11977      | CTO       | 19 X 425 DRUMS | 42.74    | -7,721     | \$3,299.96- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$3,299.96- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|--------------|-----------|---------------------|----------|------------|------------|----------|--|
| 01066-002            | DEQUEST 2000 |           | MSS                 | SOLN     | 600 LB DRM | EA         |          |  |
| TYP                  | REF-#        | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P11997   | CTO       | MILLER BLEND W18453 | 434.25   | -1         | \$434.25-  | 13116501 |  |
|                      | 544-P12102   | CTO       | MILLER BLEND W18637 | 434.25   | -1         | \$434.25-  |          |  |
| NET AMOUNT ADJUSTED: |              |           |                     |          |            | \$868.50-  |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|------------------|-----------|----------------|----------|------------|--------------|----------|--|
| 01074-001            | GLYCOL ETHER PPH |           | MSS            | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#            | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11908       | CTO       | 87 X 450 DRUMS | 58.54    | -38,770    | \$22,695.96- | 13116501 |  |
|                      | 544-P12007       | CTO       | 86 X 450 DRUMS | 58.54    | -38,690    | \$22,649.13- |          |  |
| NET AMOUNT ADJUSTED: |                  |           |                |          |            | \$45,345.09- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------|-----------|----------------|----------|------------|--------------|----------|--|
| 01081-001            | GLYCOL ETHER EB |           | MSS            | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P12091      | CTO       | 50 X 415 DRUMS | 30.72    | -21,165    | \$6,501.89-  | 13116501 |  |
|                      | 544-P12145      | CTO       | 68 X 415 DRUMS | 30.72    | -28,984    | \$8,903.88-  |          |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$15,405.77- |          |  |

MCK0062268

DATE: 08/01/85 TIME: 01:58:40 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 07/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|----------------|----------|---------------|-------------|----------|--|
| 01084-001            | GLYCOL ETHER DM |           | MSS            | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11992      | CTO       | 18 X 470 DRUMS | 45.09    | -8,600        | \$3,877.74- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |               | \$3,877.74- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|----------------|----------|---------------|--------------|----------|--|
| 01091-001            | DOWFROST   |           | MSS            | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P12069 | CTO       | 99 X 480 DRUMS | 48.37    | -47,680       | \$23,062.82- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |               | \$23,062.82- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                    | FORM     | -PACKAGE--    | UM           |       |  |
|----------------------|-----------|-----------|-------------------------|----------|---------------|--------------|-------|--|
| 01104-005            | GLYCERINE | 96%       | MCKS                    | LIQ      | 055 GL DRM EA |              |       |  |
| TYP                  | REF-#     | OPID      | REASON                  | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #  |  |
| OHD                  |           | CUI       | S/B WT VAR ON IPO 12219 | 745.84   | -45           | \$33,562.80- | 59417 |  |
|                      |           | CUI       | CORRECT PREV OHD ERROR  | 745.84   | +45           | \$33,562.80  |       |  |
| NET AMOUNT ADJUSTED: |           |           |                         |          |               | \$0.00       |       |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|----------------|----------|---------------|--------------|----------|--|
| 01104-008            | GLYCERINE  | 96%       | USP            | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11900 | CTO       | 35 X 570 DRUMS | 88.59    | -19,950       | \$17,673.71- | 13116501 |  |
|                      | 544-P11901 | CTO       | 20 X 570 DRUMS | 88.59    | -11,830       | \$10,480.20- |          |  |
|                      | 544-P12024 | CTO       | 85 X 570 DRUMS | 88.59    | -48,450       | \$42,921.86- |          |  |
|                      | 544-P12054 | CTO       | 1 X 570 DRUM   | 88.59    | -620          | \$549.26-    |          |  |
|                      | 544-P12212 | CTO       | 1 X 570 DRUMS  | 88.59    | -865          | \$766.30-    |          |  |
|                      | 544-P12219 | CTO       | 37 X 570 DRUMS | 88.59    | -21,090       | \$18,683.63- |          |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |               | \$91,074.96- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|-----------|-----------|--------------------------|----------|---------------|------------|-------|--|
| 01104-011            | GLYCERINE | 99.5%     | USP                      | LIQ      | 001 GL BLK LB |            |       |  |
| TYP                  | REF-#     | OPID      | REASON                   | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHD                  |           | CUI       | REQ. FOR DRW ON IPO12063 | 89.47    | +1            | \$0.89     | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                          |          |               | \$0.89     |       |  |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|----------------|----------|------------|--------------|----------|
| RPK                  | 544-P11957 | CTO  | 36 X 570 DRUMS | 89.47    | -20,520    | \$18,359.24- | 13116501 |
|                      | 544-P11958 | CTO  | 50 X 570 DRUMS | 89.47    | -28,570    | \$25,561.58- |          |
|                      | 544-P12063 | CTO  | 10% VARI.      | 89.47    | -1         | \$0.89-      |          |
|                      | 544-P12162 | CTO  | 40 X 570 DRUMS | 89.47    | -23,080    | \$20,649.68- |          |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$64,571.39- |          |

MCK0062269

DATE: 08/01/85 TIME: 01:58:40 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 07/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|----------------|----------|---------------|--------------|----------|--|
| 01110-001            | FREON      | TF        | NSS            | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11923 | CTO       | 34 X 690 DRUMS | 91.49    | -23,920       | \$21,884.41- | 13116501 |  |
|                      | 544-P12194 | CTO       | 36 X 690 DRUMS | 91.49    | -25,337       | \$23,180.82- |          |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |               | \$45,065.23- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|--------------------|-----------|----------------------|----------|---------------|------------|-------|--|
| 01113-007            | BORAX PENTAHYDRATE | 5 MOL     | *                    | GRAN     | 001 LB BLK LB |            |       |  |
| TYP                  | REF-#              | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OH0                  |                    | CUI       | REVSE RPK DRW P12177 | 11.86    | +23,999       | \$2,846.28 | 59417 |  |
| NET AMOUNT ADJUSTED: |                    |           |                      |          |               | \$2,846.28 |       |  |

| TYP                  | REF-#      | OPID | REASON                   | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|----------------------|------------|------|--------------------------|----------|------------|--------------|----------|
| RPK                  | 544-P11744 | CTO  | 1858 X 100 BAGS          | 11.86    | -50,000    | \$5,930.00-  | 13116501 |
|                      | 544-P11744 | CTO  | 1858 X 100 BAGS          | 11.86    | -50,000    | \$5,930.00-  |          |
|                      | 544-P11744 | CTO  | 1858 X 100 BAGS          | 11.86    | -50,000    | \$5,930.00-  |          |
|                      | 544-P11744 | CTO  | 1858 X 100 BAGS          | 11.86    | -50,000    | \$5,930.00-  |          |
|                      | 544-P11999 | CTO  | 1320 X 100 BAGS          | 11.86    | -66,699    | \$7,910.50-  |          |
|                      | 544-P11999 | CTO  | 1320 X 100 BAGS          | 11.86    | -66,700    | \$7,910.62-  |          |
|                      | 544-P12000 | CTO  | 34 X 2000 S.S.           | 11.86    | -68,000    | \$8,064.80-  |          |
|                      | 544-P12177 | CTO  | 12 X 2000 S.S. RE:P12000 | 11.86    | -24,000    | \$2,846.40-  |          |
| NET AMOUNT ADJUSTED: |            |      |                          |          |            | \$50,452.32- |          |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|------------|-----------|-----------------------|----------|---------------|--------------|----------|--|
| 01120-012            | SODA ASH   | DENSE     | *                     | GRAN     | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#      | OPID      | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11603 | CTO       | 1953 X 50 BAGS STAUF. | 5.70     | -51,950       | \$2,961.15-  | 13116501 |  |
|                      | 544-P11603 | CTO       | 1953 X 50 BAGS STAUF. | 5.70     | -51,950       | \$2,961.15-  |          |  |
|                      | 544-P11857 | CTO       | 1926 X 100 BAGS       | 5.70     | -97,300       | \$5,546.10-  |          |  |
|                      | 544-P11857 | CTO       | 1926 X 100 BAGS       | 5.70     | -97,300       | \$5,546.10-  |          |  |
|                      | 544-P11988 | CTO       | 10% WT VAR,SEE 11603  | 5.70     | -1            | \$0.06-      |          |  |
| NET AMOUNT ADJUSTED: |            |           |                       |          |               | \$17,014.56- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                      | FORM     | -PACKAGE--    | UM           |       |  |
|----------------------|------------|-----------|---------------------------|----------|---------------|--------------|-------|--|
| 01120-015            | SODA ASH   | DENSE     | MCKS                      | GRAN     | 100 LB BAG EA |              |       |  |
| TYP                  | REF-#      | OPID      | REASON                    | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #  |  |
| RCS                  | 544-P11098 | CSH       | INTER AM/BWYA70004SDM5028 | 7.21     | -480          | \$3,460.80-  | 12492 |  |
|                      | 544-P11205 | CSH       | INTER AM/BWYA70003SDM5027 | 7.21     | -480          | \$3,460.80-  |       |  |
|                      | 544-P11304 | CSH       | INTER AM/SDM5025/BWYA0002 | 7.21     | -480          | \$3,460.80-  |       |  |
|                      | 544-P11304 | CSH       | INTER AM/SDM5025/BWYA0001 | 7.21     | -480          | \$3,460.80-  |       |  |
| NET AMOUNT ADJUSTED: |            |           |                           |          |               | \$13,843.20- |       |  |

MCK0062270

DATE: 08/01/85 TIME: 01:58:40 MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH 07/85

JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|------------|-----------|----------------|----------|------------|-------------|----------|--|--|
| 01120-023 | SODA ASH   | GRADE 80  | *              | GRAN     | 001 LB BLK | LB          |          |  |  |
| TYP       | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P12175 | CTO       | 532 X 100 BAGS | 5.34     | -54,830    | \$2,927.92- | 13116501 |  |  |

NET AMOUNT ADJUSTED: \$2,927.92-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM          |       |  |  |
|-----------|-------------------|-----------|-------------------------|----------|------------|-------------|-------|--|--|
| 01124-070 | HYDROGEN PEROXIDE | 70% TECH  | MSS                     | LIQ      | 001 LB BLK | LB          |       |  |  |
| TYP       | REF-#             | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |  |
| OH0       |                   | CUI       | S/B PT OF DRW IPO 12131 | 46.19    | -7,077     | \$3,268.87- | 59417 |  |  |

NET AMOUNT ADJUSTED: \$3,268.87-

| TYP | REF-#      | OPID | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
|-----|------------|------|--------------|----------|------------|--------------|----------|
| RPK | 544-P12048 | CTO  | DILUTION 50% | 46.19    | -54,000    | \$24,942.60- | 13116501 |
|     | 544-P12131 | CTO  | DILUTION     | 46.19    | -36,333    | \$16,782.21- |          |
|     | 544-P12271 | CTO  | BLEND 50%    | 46.19    | -36,344    | \$16,787.29- |          |

NET AMOUNT ADJUSTED: \$58,512.10-

| PROD-CD   | PROD-NAME         | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|-------------------|-----------|-----------------------|----------|------------|-------------|----------|--|--|
| 01125-001 | HYDROCHLORIC ACID | 20 BE     | *                     | LIQ      | 001 LB BLK | LB          |          |  |  |
| TYP       | REF-#             | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P11899        | CTO       | 189 X 140 CARBOYS     | 3.70     | -26,460    | \$979.02-   | 13116501 |  |  |
|           | 544-P12001        | CTO       | 12 X 507 DRUMS ENVIR. | 3.70     | -6,084     | \$225.11-   |          |  |  |
|           | 544-P12002        | CTO       | 160 X 44 LIQUIDIKA    | 3.70     | -7,040     | \$260.48-   |          |  |  |
|           | 544-P12003        | CTO       | 8 X 507 LIQUIDIKA     | 3.70     | -4,056     | \$150.07-   |          |  |  |
|           | 544-P12023        | CTO       | 111 X 500 DRUMS       | 3.70     | -55,500    | \$2,053.50- |          |  |  |
|           | 544-P12023        | CTO       | 53 X 500 DRUMS        | 3.70     | -26,500    | \$980.50-   |          |  |  |
|           | 544-P12080        | CTO       | 152 X 500 DRUMS       | 3.70     | -76,000    | \$2,812.00- |          |  |  |
|           | 544-P12083        | CTO       | 146 X 140 CARBOYS     | 3.70     | -20,440    | \$756.28-   |          |  |  |

NET AMOUNT ADJUSTED: \$8,216.96-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |  |
|-----------|------------|-----------|---------------------|----------|------------|-------------|----------|--|--|
| 01132-001 | METHANOL   |           | *                   | LIQ      | 001 GL BLK | LB          |          |  |  |
| TYP       | REF-#      | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK       | 544-P11948 | CTO       | 100 X 358 DRUMS     | 9.14     | -36,516    | \$3,337.56- | 13116501 |  |  |
|           | 544-P12078 | CTO       | 200 X 358 LBS DRUMS | 9.14     | -73,032    | \$6,675.12- |          |  |  |

NET AMOUNT ADJUSTED: \$10,012.68-

MCK0062271

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |          |  |  |
|----------------------|------------------|-----------|---------------------|----------|------------|-------------|----------|--|--|
| 01143-002            | SODIUM GLUCONATE |           | *                   | FNGR     | 050 LB BAG | EA          |          |  |  |
| TYP                  | REF-#            | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P11902       | CTO       | MILLER BLEND W18374 | 28.22    | -7         | \$197.54-   | 13116501 |  |  |
|                      | 544-P11997       | CTO       | MILLER BLEND W18453 | 28.22    | -7         | \$197.54-   |          |  |  |
|                      | 544-P12060       | CTO       | M. BREWING W18454   | 28.22    | -7         | \$197.54-   |          |  |  |
|                      | 544-P12102       | CTO       | MILLER BLEND W18637 | 28.22    | -7         | \$197.54-   |          |  |  |
|                      | 544-P12113       | CTO       | BUSCH BLEND W18647  | 28.22    | -20        | \$564.40-   |          |  |  |
| NET AMOUNT ADJUSTED: |                  |           |                     |          |            | \$1,354.56- |          |  |  |

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|---------------------|-----------|-----------------|----------|---------------|-------------|----------|--|--|
| 01147-022            | SODIUM HYPOCHLORITE | 12.5%     | MCKS            | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#               | OPID      | REASON          | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P12013          | CTO       | 98 X 550 DRUMS  | 4.00     | -53,900       | \$2,156.00- | 13116501 |  |  |
|                      | 544-P12158          | CTO       | 100 X 550 DRUMS | 4.00     | -55,000       | \$2,200.00- |          |  |  |
| NET AMOUNT ADJUSTED: |                     |           |                 |          |               | \$4,356.00- |          |  |  |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD                      | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|--------------------------|-----------|---------------------------|----------|---------------|------------|-------|--|--|
| 01154-010            | SODIUM SULFATE ANHYDROUS | ANHYD     | *                         | GRAM     | 001 LB BLK LB |            |       |  |  |
| TYP                  | REF-#                    | OPID      | REASON                    | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| RCS                  | 544-P11750               | CSH       | CHG BACK KMCX231 KERR MCG | 5.56     | -6,460        | \$359.18-  | 12492 |  |  |
| NET AMOUNT ADJUSTED: |                          |           |                           |          |               | \$359.18-  |       |  |  |

| TYP                  | REF-#      | OPID | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
|----------------------|------------|------|--------------------|----------|------------|--------------|----------|--|--|
| RPK                  | 544-P11597 | CTO  | 1957 X 100 BAGS    | 5.56     | -99,640    | \$5,539.98-  | 13116501 |  |  |
|                      | 544-P11597 | CTO  | 1957 X 100 BAGS    | 5.56     | -99,640    | \$5,539.98-  |          |  |  |
|                      | 544-P11754 | CTO  | 1888 X 100 BAGS KM | 5.56     | -94,400    | \$5,248.64-  |          |  |  |
|                      | 544-P11754 | CTO  | 1888 X 100 BAGS KM | 5.56     | -94,400    | \$5,248.64-  |          |  |  |
|                      | 544-P11856 | CTO  | 744 X 100 BAGS     | 5.56     | -68,590    | \$3,813.60-  |          |  |  |
|                      | 544-P11856 | CTO  | 270 X 100 BAGS     | 5.56     | -27,000    | \$1,501.20-  |          |  |  |
|                      | 544-P12142 | CTO  | 2000 X 50 BAGS     | 5.56     | -50,000    | \$2,780.00-  |          |  |  |
|                      | 544-P12142 | CTO  | 2000 X 50 BAGS     | 5.56     | -50,000    | \$2,780.00-  |          |  |  |
|                      | 544-P12230 | CTO  | 9 X 50 BAGS        | 5.56     | -450       | \$25.02-     |          |  |  |
| NET AMOUNT ADJUSTED: |            |      |                    |          |            | \$32,477.06- |          |  |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-----------------|-----------|----------------|----------|---------------|-------------|----------|--|--|
| 01158-027            | SODIUM SILICATE | N         | *              | LIQ      | 001 LB BLK LB |             |          |  |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P11952      | CTO       | 74 X 635 DRUMS | 6.61     | -46,420       | \$3,068.36- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |               | \$3,068.36- |          |  |  |

MCK0062272

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|---------------------|-----------|------------------------|----------|---------------|-------------|----------|--|
| 01162-001            | METHYL ETHYL KETONE |           | *                      | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#               | OPID      | REASON                 | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P12163          | CTO       | CH. COAT. BLEND W18844 | 27.37    | -1,178        | \$322.42-   | 13116501 |  |
|                      | 544-P12270          | CTO       | MAG.PROD.BLEND W18910  | 27.37    | -4,831        | \$1,322.24- |          |  |
| NET AMOUNT ADJUSTED: |                     |           |                        |          |               | \$1,644.66- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|------------------|----------|---------------|-------------|----------|--|
| 01172-001            | PHOSPHORIC ACID | 75%       | *                | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON           | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P12203      | CTO       | 70 X 200 CARBOYS | 27.99    | -14,000       | \$3,918.60- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |                  |          |               | \$3,918.60- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|------------------|----------|---------------|-------------|----------|--|
| 01172-003            | PHOSPHORIC ACID | 85%       | *                | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON           | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P11990      | CTO       | 20 X 700 DRUMS   | 32.34    | -14,000       | \$4,527.60- | 13116501 |  |
|                      | 544-P12062      | CTO       | 64 X 200 CARBOYS | 32.34    | -12,800       | \$4,139.52- |          |  |
| NET AMOUNT ADJUSTED: |                 |           |                  |          |               | \$8,667.12- |          |  |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------|-----------|-------------------|----------|---------------|-------------|----------|--|
| 01189-001            | NITRIC ACID | 42 BE     | *                 | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#       | OPID      | REASON            | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |  |
| RPK                  | 544-P11916  | CTO       | 99 X 600 DRUMS    | 8.81     | -59,400       | \$5,233.14- | 13116501 |  |
|                      | 544-P12014  | CTO       | 117 X 95 CARBOYS  | 8.81     | -11,115       | \$979.23-   |          |  |
|                      | 544-P12081  | CTO       | 61 X 170 DRUMS    | 8.81     | -10,370       | \$913.60-   |          |  |
|                      | 544-P12140  | CTO       | 10% VARI.IPO12081 | 8.81     | -1            | \$0.09-     |          |  |
| NET AMOUNT ADJUSTED: |             |           |                   |          |               | \$7,126.06- |          |  |

| PROD-CD              | PROD-NAME            | QUALIFIER  | GRAD                   | FORM     | -PACKAGE--    | UM        |          |  |
|----------------------|----------------------|------------|------------------------|----------|---------------|-----------|----------|--|
| 01193-005            | GLYCOL ETHER ACETATE | CELLOSOLVE | MCKS                   | LIQ      | 055 GL DRM EA |           |          |  |
| TYP                  | REF-#                | OPID       | REASON                 | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #     |  |
| RPK                  | 544-P11946           | CTO        | WHITTAKER BLEND W18421 | 246.07   | -2            | \$492.14- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                      |            |                        |          |               | \$492.14- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM        |       |  |
|----------------------|-------------------|-----------|----------------|----------|---------------|-----------|-------|--|
| 01212-004            | PERCHLOROETHYLENE | SVG       | *              | LIQ      | 001 GL BLK LB |           |       |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST | GL #  |  |
| OHQ                  |                   | CUI       | WKLY BULK PHYS | 27.34    | -1,582        | \$432.52- | 59417 |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |               | \$432.52- |       |  |

MCK0062273

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-------------------|-----------|------------------|----------|---------------|-------------|----------|--|
| 01212-005            | PERCHLOROETHYLENE |           | *                | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#             | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11925        | CTO       | 5 X 700 DRUMS    | 26.47    | -70           | \$18.53-    | 13116501 |  |
|                      | 544-P11925        | CTO       | 5 X 700 DRUMS    | 26.47    | -3,500        | \$926.45-   |          |  |
|                      | 544-P12021        | CTO       | MBL BLEND W18523 | 26.47    | -828          | \$219.17-   |          |  |
|                      | 544-P12182        | CTO       | FLOKEM #2 W18748 | 26.47    | -1,397        | \$369.79-   |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                  |          |               | \$1,533.94- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-----------------|-----------|----------------|----------|---------------|--------------|----------|--|
| 01225-001            | ETHYLENE GLYCOL |           | *              | LIQ      | 001 GL BLK LB |              |          |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11905      | CTO       | 27X 519 DRUMS  | 21.96    | -14,293       | \$3,138.74-  | 13116501 |  |
|                      | 544-P11960      | CTO       | 30 X 519 DRUMS | 21.96    | -15,570       | \$3,419.17-  |          |  |
|                      | 544-P12092      | CTO       | 50 X 519 DRUMS | 21.96    | -26,469       | \$5,812.59-  |          |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |               | \$12,370.50- |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM         |          |  |
|----------------------|--------------------|-----------|------------------|----------|---------------|------------|----------|--|
| 01229-003            | METHYLENE CHLORIDE |           | *                | LIQ      | 001 GL BLK LB |            |          |  |
| TYP                  | REF-#              | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| OHD                  |                    | CUI       | WKLY BULK PHYS   | 24.06    | -383          | \$92.15-   | 59417    |  |
| NET AMOUNT ADJUSTED: |                    |           |                  |          |               | \$92.15-   |          |  |
| TYP                  | REF-#              | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P12011         | CTO       | 2 X 600 DRUMS    | 24.06    | -1,224        | \$294.49-  | 13116501 |  |
|                      | 544-P12182         | CTO       | FLOKEM #2 W18748 | 24.06    | -2,184        | \$525.47-  |          |  |
| NET AMOUNT ADJUSTED: |                    |           |                  |          |               | \$819.96-  |          |  |

| PROD-CD              | PROD-NAME          | QUALIFIER  | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|--------------------|------------|----------------|----------|---------------|-------------|----------|--|
| 01229-011            | METHYLENE CHLORIDE | AEROTHN MM | *              | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#              | OPID       | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11942         | CTO        | 16 X 600 DRUMS | 24.73    | -10,000       | \$2,473.00- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                    |            |                |          |               | \$2,473.00- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------|-----------|----------------------|----------|---------------|-------------|----------|--|
| 01233-001            | XYLENE     |           | *                    | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#      | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P12086 | CTO       | 51 X 390 DRUMS       | 20.18    | -20,288       | \$4,094.12- | 13116501 |  |
|                      | 544-P12098 | CTO       | CH COAT BLEND W18844 | 20.18    | -785          | \$158.41-   |          |  |
|                      | 544-P12206 | CTO       | 10% VARI IPO 12086   | 20.18    | -1            | \$0.20-     |          |  |
| NET AMOUNT ADJUSTED: |            |           |                      |          |               | \$4,252.73- |          |  |

MCK0062274

PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 21  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                    | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|------------|-----------|-------------------------|----------|---------------|-------------|----------|--|
| 01236-002            | TOLUENE    |           | *                       | LIQ      | 001 GL BLK LB |             |          |  |
| TYP                  | REF-#      | OPID      | REASON                  | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11946 | CTO       | WHITTAKER BLEND W18421  | 19.13    | -1,675        | \$320.43-   | 13116501 |  |
|                      | 544-P12079 | CTO       | 50 X 390 DRUMS          | 19.13    | -19,890       | \$3,804.96- |          |  |
|                      | 544-P12098 | CTO       | CH COATING BLEND W18844 | 19.13    | -1,305        | \$249.65-   |          |  |
|                      | 544-P12163 | CTO       | CH.COAT.BLEND W18844    | 19.13    | -1,178        | \$225.35-   |          |  |
|                      | 544-P12270 | CTO       | MAG.PROD.BLEND W18910   | 19.13    | -2,349        | \$449.36-   |          |  |
| NET AMOUNT ADJUSTED: |            |           |                         |          |               | \$5,049.75- |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM          |       |  |
|----------------------|-----------|-----------|---------------------|----------|---------------|-------------|-------|--|
| 01236-004            | TOLUENE   |           | MCKS                | LIQ      | 054 GL DRM EA |             |       |  |
| TYP                  | REF-#     | OPID      | REASON              | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OHQ                  |           | CUI       | S/B S/B PC 01236010 | 93.77    | -50           | \$4,688.50- | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                     |          |               | \$4,688.50- |       |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM         |       |  |
|----------------------|-----------|-----------|------------------|----------|---------------|------------|-------|--|
| 01236-010            | TOLUENE   |           | MCKS             | LIQ      | 054 GL RDM EA |            |       |  |
| TYP                  | REF-#     | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHQ                  |           | CUI       | FROM PC 01236004 | 90.09    | +50           | \$4,504.50 | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                  |          |               | \$4,504.50 |       |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                      | FORM     | -PACKAGE--    | UM           |          |  |
|----------------------|-------------------|-----------|---------------------------|----------|---------------|--------------|----------|--|
| 01238-001            | ISOPROPYL ALCOHOL | 99%       | *                         | LIQ      | 001 LB BLK LB |              |          |  |
| TYP                  | REF-#             | OPID      | REASON                    | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P12006        | CTO       | 100 X 355 DRUMS           | 24.07    | -35,500       | \$8,544.85-  | 13116501 |  |
|                      | 544-P12074        | CTO       | 3 X 345 GAL PTK,2160# EA. | 24.07    | -6,610        | \$1,591.03-  |          |  |
|                      | 544-P12075        | CTO       | 100 X 355 DRUMS           | 24.07    | -36,210       | \$8,715.75-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                           |          |               | \$18,851.63- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |
|----------------------|-----------------|-----------|----------------|----------|---------------|-------------|----------|--|
| 01245-011            | TRIETHANOLAMINE | 85%       | *              | LIQ      | 001 LB BLK LB |             |          |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11938      | CTO       | 36 X 510 DRUMS | 34.04    | -18,300       | \$6,229.32- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |               | \$6,229.32- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                    | FORM     | -PACKAGE--    | UM         |          |  |
|----------------------|------------------|-----------|-------------------------|----------|---------------|------------|----------|--|
| 01248-003            | ISOBUTYL ALCOHOL |           | MCKS                    | LIQ      | 055 GL DRM EA |            |          |  |
| TYP                  | REF-#            | OPID      | REASON                  | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P12098       | CTO       | CH COATING BLEND W18844 | 117.76   | -4            | \$471.04-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |                         |          |               | \$471.04-  |          |  |

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DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 22  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |       |
|-----------|-----------------------|-----------|----------------|----------|---------------|-------------|-------|
| 01260-009 | 1,1,1 TRICHLOROETHANE | CHLORO SM | MSS            | LIQ      | 001 GL BLK LB |             |       |
| TYP       | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #  |
| OHD       |                       | CUI       | WKLY BULK PHYS | 37.04    | -6,069        | \$2,247.96- | 59417 |

NET AMOUNT ADJUSTED: \$2,247.96-

| TYP | REF-#      | OPID | REASON           | AVG-COST | QTY-ADJST | AMT-ADJST    | GL #     |
|-----|------------|------|------------------|----------|-----------|--------------|----------|
| RPK | 544-P11915 | CTO  | 66 X 592 DRUMS   | 37.04    | -39,853   | \$14,761.55- | 13116501 |
|     | 544-P12021 | CTO  | MBL BLEND W18523 | 37.04    | -4,772    | \$1,767.55-  |          |
|     | 544-P12189 | CTO  | 100 X 592 DRUMS  | 37.04    | -60,384   | \$22,366.23- |          |
|     | 544-P12193 | CTO  | 100 X 592 DRUMS  | 37.04    | -28,511   | \$10,560.47- |          |

NET AMOUNT ADJUSTED: \$49,455.80-

| PROD-CD   | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |       |
|-----------|-----------------------|-----------|----------------|----------|---------------|------------|-------|
| 01260-022 | 1,1,1 TRICHLOROETHANE | VDG       | *              | LIQ      | 001 GL BLK LB |            |       |
| TYP       | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST  | GL #  |
| OHD       |                       | CUI       | WKLY BULK PHYS | 38.10    | +5,558        | \$2,117.60 | 59417 |

NET AMOUNT ADJUSTED: \$2,117.60

| TYP | REF-#      | OPID | REASON          | AVG-COST | QTY-ADJST | AMT-ADJST    | GL #     |
|-----|------------|------|-----------------|----------|-----------|--------------|----------|
| RPK | 544-P11943 | CUG  |                 | 38.10    | -43,320   | \$16,504.92- | 13116501 |
|     | 544-P12193 | CTO  | 100 X 592 DRUMS | 38.10    | -31,873   | \$12,143.61- |          |

NET AMOUNT ADJUSTED: \$28,648.53-

| PROD-CD   | PROD-NAME       | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM          |          |
|-----------|-----------------|-----------|---------------|----------|---------------|-------------|----------|
| 01265-001 | STYRENE MONOMER |           | *             | LIQ      | 001 GL BLK LB |             |          |
| TYP       | REF-#           | OPID      | REASON        | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |
| RPK       | 544-P11940      | CTO       | 9 X 410 DRUMS | 30.29    | -3,940        | \$1,193.43- | 13116501 |

NET AMOUNT ADJUSTED: \$1,193.43-

| PROD-CD   | PROD-NAME    | QUALIFIER  | GRAD                  | FORM     | -PACKAGE--    | UM           |          |
|-----------|--------------|------------|-----------------------|----------|---------------|--------------|----------|
| 01273-040 | SILICONE OIL | L45 60000C | MSS                   | LIQ      | 001 GL BLK LB |              |          |
| TYP       | REF-#        | OPID       | REASON                | AVG-COST | QTY-ADJST     | AMT-ADJST    | GL #     |
| RPK       | 544-P12121   | CTO        | UNION CHEMICAL W18724 | 198.00   | -18,010       | \$35,659.80- | 13116501 |

NET AMOUNT ADJUSTED: \$35,659.80-

| PROD-CD   | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |
|-----------|------------|-----------|----------------|----------|---------------|-------------|----------|
| 01281-003 | NEODOL     | 91-8      | *              | LIQ      | 001 LB BLK LB |             |          |
| TYP       | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJST     | AMT-ADJST   | GL #     |
| RPK       | 544-P12044 | CTO       | 19 X 440 DRUMS | 44.75    | -8,550        | \$3,826.13- | 13116501 |

NET AMOUNT ADJUSTED: \$3,826.13-

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PGM: CK02L2IP VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 23  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01281-009            | NE000L     | 25-3      | *              | LIQ      | 001 LB BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P12137 | CTO       | 27 X 410 DRUMS | 52.32    | -11,090    | \$5,802.29- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |            | \$5,802.29- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------|-----------|--------------------|----------|------------|--------------|----------|--|
| 01282-020            | CAUSTIC SODA |           | *                  | BEAD     | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#        | OPID      | REASON             | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11895   | CTO       | 80 X 500 DRUMS     | 16.82    | -40,000    | \$6,728.00-  | 13116501 |  |
|                      | 544-P12109   | CTO       | 80 X 500 DRUMS MCK | 16.82    | -40,000    | \$6,728.00-  |          |  |
|                      | 544-P12110   | CTO       | 80 X 500 DRUMS     | 16.82    | -40,000    | \$6,728.00-  |          |  |
|                      | 544-P12202   | CTO       | 80 X 500 DRUMS     | 16.82    | -40,000    | \$6,728.00-  |          |  |
| NET AMOUNT ADJUSTED: |              |           |                    |          |            | \$26,912.00- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|--------------|-----------|-------------------------|----------|------------|------------|----------|--|
| 01282-051            | CAUSTIC SODA | CONSIGNED | *                       | BEAD     | 001 LB BLK | LB         |          |  |
| TYP                  | REF-#        | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RCS                  | 544-P12127   | CSH       | ECON VMC51409/SDM5023D  | 0.01     | -40,620    | \$4.06-    | 12492    |  |
| NET AMOUNT ADJUSTED: |              |           |                         |          |            | \$4.06-    |          |  |
| TYP                  | REF-#        | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P12114   | CTO       | 15 X 3000 VULCAN        | 0.01     | -45,000    | \$4.50-    | 13116501 |  |
|                      | 544-P12153   | CTO       | 15 X 3000 FLOBINS VULC. | 0.01     | -45,000    | \$4.50-    |          |  |
|                      | 544-P12297   | CSH       | 33 X 2000               | 0.01     | -66,000    | \$6.60-    |          |  |
| NET AMOUNT ADJUSTED: |              |           |                         |          |            | \$15.60-   |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|-----------------------|----------|------------|------------|-------|--|
| 01282-052            | CAUSTIC SODA | CONSIGNED | MCKS                  | BEAD     | 500 LB DRM | EA         |       |  |
| TYP                  | REF-#        | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P11710   | CSH       | RSR VMC51403/SDM5023C | 0.05     | -68        | \$3.40-    | 12492 |  |
| NET AMOUNT ADJUSTED: |              |           |                       |          |            | \$3.40-    |       |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|--------------|-----------|--------------------------|----------|------------|------------|-------|--|
| 01282-053            | CAUSTIC SODA | CONSIGNED | CUST                     | BEAD     | 001 EA PTK | EA         |       |  |
| TYP                  | REF-#        | OPID      | REASON                   | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| RCS                  | 544-P11770   | CSH       | OAKITE/VMC51408SDM5023C  | 0.27     | -15        | \$4.05-    | 12492 |  |
|                      | 544-P12114   | CSH       | OAKITE/SDM5023EVMC51410  | 0.27     | -15        | \$4.05-    |       |  |
|                      | 544-P12153   | CSH       | OAKITE VMC51411/SDM5029A | 0.27     | -15        | \$4.05-    |       |  |
| NET AMOUNT ADJUSTED: |              |           |                          |          |            | \$12.15-   |       |  |

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PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 24  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|--------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01316-001            | TRITON N-101 |           | *              | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#        | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11907   | CTO       | 25 X 480 DRUMS | 33.66    | -12,000    | \$4,039.20- | 13116501 |  |
| NET AMOUNT ADJUSTED: |              |           |                |          |            | \$4,039.20- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|--------------|-----------|-----------------|----------|------------|--------------|----------|--|
| 01336-001            | TRITON X-100 |           | *               | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#        | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11906   | CTO       | 100 X 480 DRUMS | 60.74    | -48,000    | \$29,155.20- | 13116501 |  |
| NET AMOUNT ADJUSTED: |              |           |                 |          |            | \$29,155.20- |          |  |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM          |       |  |
|----------------------|---------------|-----------|---------------------|----------|------------|-------------|-------|--|
| 01361-002            | SULFURIC ACID | 96%       | *                   | LIQ      | 001 LB BLK | LB          |       |  |
| TYP                  | REF-#         | OPID      | REASON              | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #  |  |
| OH0                  |               | CUI       | TRANSFER SKU'S ONLY | 2.34     | -99,000    | \$2,316.60- | 59417 |  |
|                      |               | CUI       | PREV PST S?B RPK    | 2.34     | +99,000    | \$2,316.60  |       |  |
| NET AMOUNT ADJUSTED: |               |           |                     |          |            | \$0.00      |       |  |

| TYP                  | REF-#      | OPID | REASON            | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
|----------------------|------------|------|-------------------|----------|------------|--------------|----------|--|
| RPK                  | 544-P11910 | CTO  | 153 X 700 DRUMS   | 2.34     | -93,550    | \$2,189.07-  | 13116501 |  |
|                      | 544-P11910 | CTO  | 153 X 700 DRUMS   | 2.34     | -93,550    | \$2,189.07-  |          |  |
|                      | 544-P11926 | CTO  | 200 X 225 CARBOYS | 2.34     | -45,000    | \$1,053.00-  |          |  |
|                      | 544-P11930 | CUG  |                   | 2.34     | -99,000    | \$2,316.60-  |          |  |
|                      | 544-P11944 | CUG  |                   | 2.34     | -99,000    | \$2,316.60-  |          |  |
|                      | 544-P12030 | CUI  | TRNSFR SKU'S ONLY | 2.34     | -99,000    | \$2,316.60-  |          |  |
|                      | 544-P12077 | CTO  | 100 X 700 DRUMS   | 2.34     | -70,000    | \$1,638.00-  |          |  |
|                      | 544-P12077 | CTO  | 115 X 700 DRUMS   | 2.34     | -80,500    | \$1,883.70-  |          |  |
|                      | 544-P12143 | CTO  | TRANSFER          | 2.34     | -99,000    | \$2,316.60-  |          |  |
|                      | 544-P12178 | CTO  | TRANSFER          | 2.34     | -99,000    | \$2,316.60-  |          |  |
|                      | 544-P12267 | CTO  | STOCK TRANSFER    | 2.34     | -15,000    | \$351.00-    |          |  |
|                      | 544-P12281 | CTO  | TRANSFER          | 2.34     | -99,000    | \$2,316.60-  |          |  |
| NET AMOUNT ADJUSTED: |            |      |                   |          |            | \$23,203.44- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|-----------------|-----------|------------------------|----------|------------|------------|----------|--|
| 01369-002            | N-BUTYL ALCOHOL |           | MCKS                   | LIQ      | 055 GL DRM | EA         |          |  |
| TYP                  | REF-#           | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P11946      | CTO       | WHITTAKER BLEND W18421 | 154.40   | -2         | \$308.80-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |                 |           |                        |          |            | \$308.80-  |          |  |

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PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 25  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME            | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM         |       |  |
|-----------|----------------------|-----------|----------------------|----------|---------------|------------|-------|--|
| 01377-001 | CAUSTIC SODA, LIQUID | 50%       | *                    | LIQ      | 001 GL BLK LB |            |       |  |
| TYP       | REF-#                | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |
| OHQ       |                      | CUI       | S/B 18% ON IPO 12160 | 7.90     | +95,832       | \$7,570.73 | 59417 |  |

NET AMOUNT ADJUSTED: \$7,570.73

| TYP | REF-#      | OPID | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|-------------------------|----------|------------|-------------|----------|
| RPK | 544-P11902 | CTO  | MILLER BLEND W18374     | 7.90     | -18,411    | \$1,454.47- | 13116501 |
|     | 544-P11903 | CTO  | ITT CANNON BLEND W18365 | 7.90     | -17,892    | \$1,413.47- |          |
|     | 544-P11904 | CTO  | NI BLEND W18376         | 7.90     | -21,976    | \$1,736.10- |          |
|     | 544-P11921 | CTO  | DILUTION FOR 18%        | 7.90     | -19,613    | \$1,549.43- |          |
|     | 544-P11934 | CTO  | MCD DOUG. BLEND W18396  | 7.90     | -1,722     | \$136.04-   |          |
|     | 544-P11935 | CTO  | 2 X 65,5 GAL PAILS      | 7.90     | -68        | \$5.37-     |          |
|     | 544-P11937 | CTO  | 150 X 680 DRUMS         | 7.90     | -52,342    | \$4,135.02- |          |
|     | 544-P11953 | CTO  | 87 X 680 DRUMS          | 7.90     | -30,358    | \$2,398.28- |          |
|     | 544-P11953 | CTO  | 142 X 680 ACT II DRUMS  | 7.90     | -49,519    | \$3,912.00- |          |
|     | 544-P11962 | CTO  | 10% VARI.SEE JT 11921   | 7.90     | -1         | \$0.08-     |          |
|     | 544-P11982 | CTO  | 126 X 680 DRUMS         | 7.90     | -43,967    | \$3,473.39- |          |
|     | 544-P11995 | CTO  | MC.DON BLEND W18485     | 7.90     | -2,830     | \$223.57-   |          |
|     | 544-P11996 | CTO  | GEN. MO.BLEND W18466    | 7.90     | -6,741     | \$532.54-   |          |
|     | 544-P11997 | CTO  | MILLER BR.BLEND W18453  | 7.90     | -17,646    | \$1,394.03- |          |
|     | 544-P12020 | CTO  | DILUTION C.S. 18%       | 7.90     | -7,061     | \$557.82-   |          |
|     | 544-P12022 | CTO  | NI BLEND W18538         | 7.90     | -21,228    | \$1,677.01- |          |
|     | 544-P12060 | CTO  | M.BREWING W13454        | 7.90     | -6,399     | \$505.52-   |          |
|     | 544-P12068 | CTO  | ITT CANNON W18635       | 7.90     | -17,155    | \$1,355.25- |          |
|     | 544-P12071 | CTO  | BENCHMARK BLEND W18614  | 7.90     | -5,328     | \$420.91-   |          |
|     | 544-P12073 | CTO  | 20 X 550 DRUMS          | 7.90     | -2,258     | \$178.38-   |          |
|     | 544-P12093 | CTO  | CAUSTIC BLEND 18%,PIKE  | 7.90     | -19,090    | \$1,508.11- |          |
|     | 544-P12102 | CTO  | MILLER BLEND W18637     | 7.90     | -18,576    | \$1,467.50- |          |
|     | 544-P12107 | CTO  | M. DOUGLAS BLEND W18645 | 7.90     | -2,363     | \$186.68-   |          |
|     | 544-P12113 | CTO  | BUSCH BLEND W18647      | 7.90     | -23,399    | \$1,848.52- |          |
|     | 544-P12151 | CTO  | MC.DONALD BLEND W18741  | 7.90     | -2,855     | \$225.55-   |          |
|     | 544-P12159 | CTO  | CAUSTIC 18% CUT         | 7.90     | -20,264    | \$1,600.86- |          |
|     | 544-P12160 | CTO  | BLEACH BLEND            | 7.90     | -95,832    | \$7,570.73- |          |
|     | 544-P12187 | CTO  | NI BLEND W18785         | 7.90     | -22,416    | \$1,770.86- |          |
|     | 544-P12216 | CTO  | CUT 18%                 | 7.90     | -19,531    | \$1,542.95- |          |
|     | 544-P12263 | CTO  | MC.DON.BLEND W18853     | 7.90     | -3,297     | \$260.46-   |          |
|     | 544-P12298 | CTO  | NI DIN. BLEND W18907    | 7.90     | -21,424    | \$1,692.50- |          |

NET AMOUNT ADJUSTED: \$46,733.40-

| PROD-CD   | PROD-NAME            | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|----------------------|-----------|-----------------|----------|---------------|-------------|----------|--|
| 01377-004 | CAUSTIC SODA, LIQUID | 50% M.C.  | *               | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#                | OPID      | REASON          | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P12026           | CTO       | 101 X 680 DRUMS | 9.81     | -35,244       | \$3,457.44- | 13116501 |  |

NET AMOUNT ADJUSTED: \$3,457.44-

MCK0062279

PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 26  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD   | PROD-NAME            | QUALIFIER | GRAD                 | FORM     | -PACKAGE--    | UM          |       |  |
|-----------|----------------------|-----------|----------------------|----------|---------------|-------------|-------|--|
| 01377-047 | CAUSTIC SODA, LIQUID | 18%       | MCKS                 | LIQ      | 001 GL BLK LB |             |       |  |
| TYP       | REF-#                | OPID      | REASON               | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #  |  |
| OH0       |                      | CUI       | S/B RPK ON IPO 12160 | 1.77     | -95,832       | \$1,696.23- | 59417 |  |

NET AMOUNT ADJUSTED: \$1,696.23-

| TYP | REF-#      | OPID | REASON       | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
|-----|------------|------|--------------|----------|------------|-------------|----------|
| RPK | 544-P11922 | CTO  | BLEACH BLEND | 1.77     | -35,638    | \$630.79-   | 13116501 |
|     | 544-P12111 | CTO  | BLEACH BLEND | 1.77     | -75,600    | \$1,338.12- |          |
|     | 544-P12112 | CTO  | BLEACH BLEND | 1.77     | -75,600    | \$1,338.12- |          |
|     | 544-P12217 | CTO  | BLEACH BLEND | 1.77     | -89,096    | \$1,577.00- |          |

NET AMOUNT ADJUSTED: \$4,884.03-

| PROD-CD   | PROD-NAME        | QUALIFIER  | GRAD                  | FORM     | -PACKAGE--    | UM           |          |  |
|-----------|------------------|------------|-----------------------|----------|---------------|--------------|----------|--|
| 01391-005 | CHELATING AGENTS | VERSNE 100 | *                     | LIQ      | 001 GL BLK LB |              |          |  |
| TYP       | REF-#            | OPID       | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST   | GL #     |  |
| RPK       | 544-P11912       | CTO        | 75 X 600 ACT II DRUMS | 30.57    | -43,420       | \$13,273.49- | 13116501 |  |

NET AMOUNT ADJUSTED: \$13,273.49-

| PROD-CD   | PROD-NAME              | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|------------------------|-----------|----------------|----------|---------------|-------------|----------|--|
| 01439-001 | METHYL ISOBUTYL KETONE |           | *              | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#                  | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P12088             | CTO       | 36 X 366 DRUMS | 42.29    | -13,208       | \$5,585.66- | 13116501 |  |

NET AMOUNT ADJUSTED: \$5,585.66-

| PROD-CD   | PROD-NAME        | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM          |          |  |
|-----------|------------------|-----------|-----------------|----------|---------------|-------------|----------|--|
| 01532-001 | ISOBUTYL ACETATE |           | *               | LIQ      | 001 GL BLK LB |             |          |  |
| TYP       | REF-#            | OPID      | REASON          | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |
| RPK       | 544-P11946       | CTO       | WHITTAKER BLEND | 32.60    | -6,360        | \$2,073.36- | 13116501 |  |

NET AMOUNT ADJUSTED: \$2,073.36-

| PROD-CD   | PROD-NAME        | QUALIFIER | GRAD                  | FORM     | -PACKAGE--    | UM         |          |  |
|-----------|------------------|-----------|-----------------------|----------|---------------|------------|----------|--|
| 01532-003 | ISOBUTYL ACETATE | 99%       | MCKS                  | LIQ      | 055 GL DRM EA |            |          |  |
| TYP       | REF-#            | OPID      | REASON                | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #     |  |
| RPK       | 544-P12098       | CTO       | CH. COAT BLEND W18844 | 160.32   | -4            | \$641.28-  | 13116501 |  |

NET AMOUNT ADJUSTED: \$641.28-

MCK0062280

PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 27  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD          | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|---------------|----------|------------|-------------|----------|--|
| 01559-001            | GLYCOL ETHER TPM |           | MSS           | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11994       | CTO       | 9 X 445 DRUMS | 36.20    | -4,060     | \$1,469.72- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |               |          |            | \$1,469.72- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01562-001            | ETHANOL (NEOSOL) | B-190     | *              | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11976       | CTO       | 55 X 366 DRUMS | 24.74    | -20,217    | \$5,001.69- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |                |          |            | \$5,001.69- |          |  |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-----------------------|-----------|----------------|----------|------------|--------------|----------|--|
| 01571-001            | CAUSTIC POTASH LIQUID | 50%       | *              | LIQ      | 001 GL BLK | LB           |          |  |
| TYP                  | REF-#                 | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11991            | CTO       | 50 X 660 DRUMS | 13.07    | -33,000    | \$4,313.10-  | 13116501 |  |
|                      | 544-P12004            | CTO       | 43 X 660 DRUMS | 13.07    | -28,380    | \$3,709.27-  |          |  |
|                      | 544-P12004            | CTO       | 51 X 660 DRUMS | 13.07    | -30,294    | \$3,959.43-  |          |  |
|                      | 544-P12005            | CTO       | 50 X 660 DRUMS | 13.07    | -33,000    | \$4,313.10-  |          |  |
| NET AMOUNT ADJUSTED: |                       |           |                |          |            | \$16,294.90- |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|----------------|----------|------------|-------------|----------|--|
| 01675-001            | HEPTANES   |           | *              | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11924 | CTO       | 21 X 333 DRUMS | 17.87    | -7,133     | \$1,274.67- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |            | \$1,274.67- |          |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|------------------------|-----------|-----------------------|----------|------------|------------|----------|--|
| 01695-002            | MINERAL SPIRITS, SHORT |           | MCKS                  | LIQ      | 055 GL DRM | EA         |          |  |
| TYP                  | REF-#                  | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P12098             | CTO       | CH.COAT. BLEND W18644 | 78.59    | -7         | \$550.13-  | 13116501 |  |
| NET AMOUNT ADJUSTED: |                        |           |                       |          |            | \$550.13-  |          |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |       |  |
|----------------------|-----------|-----------|----------------|----------|------------|------------|-------|--|
| 01699-001            | KEROSENE  | 450       | *              | LIQ      | 001 GL BLK | LB         |       |  |
| TYP                  | REF-#     | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #  |  |
| OH0                  |           | CUI       | WKLY BULK PHYS | 16.17    | -312       | \$50.45-   | 59417 |  |
| NET AMOUNT ADJUSTED: |           |           |                |          |            | \$50.45-   |       |  |

MCK0062281

PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 28  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| TYP                  | REF-#      | OPID | REASON        | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
|----------------------|------------|------|---------------|----------|------------|------------|----------|
| RPK                  | 544-P11959 | CTO  | 2 X 372 DRUMS | 16.17    | -759       | \$122.73-  | 13116501 |
| NET AMOUNT ADJUSTED: |            |      |               |          |            | \$122.73-  |          |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM           |          |
|----------------------|-------------------|-----------|----------------|----------|------------|--------------|----------|
| 01709-001            | DIOCTYL PHTHALATE |           | *              | LIQ      | 001 GL BLK | LB           |          |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |
| RPK                  | 544-P11947        | CTO       | 96 X 450 DRUMS | 32.20    | -43,680    | \$14,064.96- | 13116501 |
| NET AMOUNT ADJUSTED: |                   |           |                |          |            | \$14,064.96- |          |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM          |          |
|----------------------|--------------|-----------|-----------------|----------|------------|-------------|----------|
| 01804-001            | MCKSOLV PX-3 |           | *               | LIQ      | 001 GL BLK | LB          |          |
| TYP                  | REF-#        | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P11802   | CTO       | 115 X 409 DRUMS | 19.95    | -47,160    | \$9,408.42- | 13116501 |
| NET AMOUNT ADJUSTED: |              |           |                 |          |            | \$9,408.42- |          |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM         |          |
|----------------------|--------------|-----------|------------------------|----------|------------|------------|----------|
| 01805-001            | MCKSOLV PX-3 |           | MCKS                   | LIQ      | 055 GL DRM | EA         |          |
| TYP                  | REF-#        | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P11946   | CTO       | WHITTAKER BLEND W18421 | 118.16   | -2         | \$236.32-  | 13116501 |
| NET AMOUNT ADJUSTED: |              |           |                        |          |            | \$236.32-  |          |

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD                   | FORM     | -PACKAGE-- | UM          |          |
|----------------------|-----------------------|-----------|------------------------|----------|------------|-------------|----------|
| 01806-001            | MCKSOLV VM & P NAPTHA |           | *                      | LIQ      | 001 GL BLK | LB          |          |
| TYP                  | REF-#                 | OPID      | REASON                 | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |
| RPK                  | 544-P11946            | CTO       | WHITTAKER BLEND W18421 | 18.35    | -4,006     | \$735.10-   | 13116501 |
|                      | 544-P12163            | CTO       | CH.COAT.BLEND W18844   | 18.35    | -8,246     | \$1,513.14- |          |
|                      | 544-P12270            | CTO       | MAG PROD.BLEND W18910  | 18.35    | -1,129     | \$207.17-   |          |
| NET AMOUNT ADJUSTED: |                       |           |                        |          |            | \$2,455.41- |          |

| PROD-CD              | PROD-NAME     | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |          |
|----------------------|---------------|-----------|-----------------------|----------|------------|------------|----------|
| 01933-003            | ETHYL HEXANOL |           | MCKS                  | LIQ      | 055 GL DRM | EA         |          |
| TYP                  | REF-#         | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |
| RPK                  | 544-P12098    | CTO       | CH. COAT.BLEND W18844 | 166.11   | -1         | \$166.11-  | 13116501 |
| NET AMOUNT ADJUSTED: |               |           |                       |          |            | \$166.11-  |          |

MCK0062282

PGM: CK02L2LP VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 29  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM         |          |  |
|----------------------|-------------|-----------|-------------------------|----------|------------|------------|----------|--|
| 02398-001            | LIME SLURRY | 40-42%    | *                       | LIQ      | 001 GL BLK | LB         |          |  |
| TYP                  | REF-#       | OPID      | REASON                  | AVG-COST | QTY-ADJUST | AMT-ADJUST | GL #     |  |
| RPK                  | 544-P11903  | CTO       | ITT CANNON BLEND W18365 | 2.61     | -3,024     | \$78.93-   | 13116501 |  |
|                      | 544-P11904  | CTO       | NI BLEND W18376         | 2.61     | -4,905     | \$128.02-  |          |  |
|                      | 544-P12022  | CTO       | NI BLEND W18538         | 2.61     | -5,232     | \$136.56-  |          |  |
|                      | 544-P12187  | CTO       | NI BLEND W18785         | 2.61     | -4,687     | \$122.33-  |          |  |
|                      | 544-P12298  | CTO       | NI BLEND W18907         | 2.61     | -5,490     | \$143.29-  |          |  |
| NET AMOUNT ADJUSTED: |             |           |                         |          |            | \$609.13-  |          |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------|-----------|-----------------------|----------|------------|-------------|----------|--|
| 02701-001            | KEROSENE   |           | *                     | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#      | OPID      | REASON                | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P12121 | CTO       | UNION CHEMICAL W18724 | 16.18    | -18,860    | \$3,051.55- | 13116501 |  |
| NET AMOUNT ADJUSTED: |            |           |                       |          |            | \$3,051.55- |          |  |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|--------------|-----------|----------------|----------|------------|-------------|----------|--|
| 02716-001            | 140F SOLVENT |           | *              | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#        | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11914   | CTO       | 18 X 370 DRUMS | 18.73    | -6,820     | \$1,277.39- | 13116501 |  |
| NET AMOUNT ADJUSTED: |              |           |                |          |            | \$1,277.39- |          |  |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|-----------------|-----------|----------------|----------|------------|-------------|----------|--|
| 02719-001            | GLYCOL ETHER PM |           | MSS            | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#           | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P12138      | CTO       | 17 X 420 DRUMS | 35.75    | -7,080     | \$2,531.10- | 13116501 |  |
|                      | 544-P12139      | CTO       | 18 X 420 DRUMS | 35.75    | -7,500     | \$2,681.25- |          |  |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            | \$5,212.35- |          |  |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM          |          |  |
|----------------------|------------------|-----------|----------------|----------|------------|-------------|----------|--|
| 02721-001            | GLYCOL ETHER DPM |           | MSS            | LIQ      | 001 GL BLK | LB          |          |  |
| TYP                  | REF-#            | OPID      | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST  | GL #     |  |
| RPK                  | 544-P11993       | CTO       | 34 X 435 DRUMS | 35.30    | -15,160    | \$5,351.48- | 13116501 |  |
| NET AMOUNT ADJUSTED: |                  |           |                |          |            | \$5,351.48- |          |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM           |          |  |
|----------------------|-------------------|-----------|-----------------|----------|------------|--------------|----------|--|
| 02755-013            | HYDROGEN PEROXIDE | 35% TECH  | MSS             | LIQ      | 001 LB BLK | LB           |          |  |
| TYP                  | REF-#             | OPID      | REASON          | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |
| RPK                  | 544-P11954        | CTO       | 100 X 500 DRUMS | 22.71    | -50,000    | \$11,355.00- | 13116501 |  |
|                      | 544-P12271        | CTO       | BLEND 50%       | 22.71    | -13,283    | \$3,016.57-  |          |  |
| NET AMOUNT ADJUSTED: |                   |           |                 |          |            | \$14,371.57- |          |  |

MCK0062283

PGM: CK02L21P VER 01.5  
DATE: 08/01/85 TIME: 01:58:40

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY BRANCH  
07/85

REPORT NO: CK02R25A PAGE: 30  
JOB: CN10J6 STEP: CN10G05

BRANCH: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER  | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-------------------|------------|----------------|----------|---------------|-------------|----------|--|--|
| 02755-015            | HYDROGEN PEROXIDE | 35% SUPR D | MSS            | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#             | OPID       | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P12218        | CTO        | 25 X 500 DRUMS | 31.80    | -12,500       | \$3,975.00- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                   |            |                |          |               | \$3,975.00- |          |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM         |       |  |  |
|----------------------|-------------------|-----------|------------------------|----------|---------------|------------|-------|--|--|
| 02755-017            | HYDROGEN PEROXIDE | 50% TECH  | MSS                    | LIQ      | 001 LB BLK LB |            |       |  |  |
| TYP                  | REF-#             | OPID      | REASON                 | AVG-COST | QTY-ADJUST    | AMT-ADJUST | GL #  |  |  |
| OHG                  |                   | CUI       | RVS PT OF DRW ON 12131 | 33.78    | +10,110       | \$3,415.16 | 59417 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                        |          |               | \$3,415.16 |       |  |  |

| TYP                  | REF-#      | OPID | REASON         | AVG-COST | QTY-ADJUST | AMT-ADJUST   | GL #     |  |  |
|----------------------|------------|------|----------------|----------|------------|--------------|----------|--|--|
| RPK                  | 544-P11936 | CTO  | 88 X 500 DRUMS | 33.78    | -44,000    | \$14,863.20- | 13116501 |  |  |
|                      | 544-P11936 | CTO  | 34 X 500 DRUMS | 33.78    | -17,000    | \$5,742.60-  |          |  |  |
|                      | 544-P12099 | CTO  | 56 X 500 DRUMS | 33.78    | -28,000    | \$9,458.40-  |          |  |  |
|                      | 544-P12131 | CTO  | DILUTION       | 33.78    | -19,502    | \$6,587.78-  |          |  |  |
| NET AMOUNT ADJUSTED: |            |      |                |          |            | \$36,651.98- |          |  |  |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD             | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|------------------------|-----------|------------------|----------|---------------|-------------|----------|--|--|
| 02758-001            | MINERAL SPIRITS, SHORT | *         |                  | LIQ      | 001 GL BLK LB |             |          |  |  |
| TYP                  | REF-#                  | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| OHG                  |                        | CUI       | WKLY BULK PHYS   | 19.03    | -2,058        | \$391.64-   | 59417    |  |  |
| NET AMOUNT ADJUSTED: |                        |           |                  |          |               | \$391.64-   |          |  |  |
| TYP                  | REF-#                  | OPID      | REASON           | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P11978             | CTO       | 32 X 360 DRUMS   | 19.03    | -11,520       | \$2,192.26- | 13116501 |  |  |
|                      | 544-P12182             | CTO       | FLOKEM #2 W18748 | 19.03    | -3,169        | \$603.06-   |          |  |  |
| NET AMOUNT ADJUSTED: |                        |           |                  |          |               | \$2,795.32- |          |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM          |          |  |  |
|----------------------|-------------------|-----------|----------------|----------|---------------|-------------|----------|--|--|
| 02806-007            | TRICHLOROETHYLENE |           | MSS            | LIQ      | 001 LB BLK LB |             |          |  |  |
| TYP                  | REF-#             | OPID      | REASON         | AVG-COST | QTY-ADJUST    | AMT-ADJUST  | GL #     |  |  |
| RPK                  | 544-P11939        | CTO       | 19 X 660 DRUMS | 36.23    | -12,360       | \$4,478.03- | 13116501 |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                |          |               | \$4,478.03- |          |  |  |

MCK0062284

PCN: CK02L21P VER 01.7  
DATE: 06/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 16  
JOB: CK02J6 STEP: CK02G25

SERVICE CENT #1 544 SANTA FE SPRINGS REPACK REGION: 011

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM | -PACKAGE-- | UM | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------------|-----------|----------------|------|------------|----|----------|--------|------------|-------------|----------|-----------------|-------|
| 01002-001            | PROPYLENE GLYCOL |           | *              | LIQ  | 001 GL BLK | LB |          |        |            |             |          |                 |       |
| -----AVG COST-----   |                  |           |                |      |            |    |          |        |            |             |          |                 |       |
| TYP                  | REF-#            | OPID      | REASON         |      |            |    | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12369       | CTD       | 40 X 480 DRUMS |      |            |    | 37.10    | 37.05  | -19,200    | \$7,138.56  | 13116501 | \$24.96         | 59418 |
| NET AMOUNT ADJUSTED: |                  |           |                |      |            |    |          |        |            | \$7,138.56- |          | \$24.96         |       |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                | FORM | -PACKAGE-- | UM | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------------|-----------|---------------------|------|------------|----|----------|--------|------------|--------------|----------|-----------------|-------|
| 01002-005            | PROPYLENE GLYCOL |           | USP                 | LIQ  | 001 GL BLK | LB |          |        |            |              |          |                 |       |
| -----AVG COST-----   |                  |           |                     |      |            |    |          |        |            |              |          |                 |       |
| TYP                  | REF-#            | OPID      | REASON              |      |            |    | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12369       | CTD       | 198 X 480 NEW DRUMS |      |            |    | 36.62    | 40.90  | -95,040    | \$34,803.65  | 13116501 | \$4,067.71      | 59418 |
|                      | 544-P12392       | CTD       | 60 X 480 NEW DRUMS  |      |            |    | 36.62    | 40.90  | -28,800    | \$10,546.56  |          | \$1,232.64      |       |
|                      | 544-P12451       | CTD       | 25 X 480 DRUMS      |      |            |    | 36.62    | 40.90  | -12,000    | \$4,394.47   |          | \$513.60        |       |
|                      | 544-P12459       | CTD       | TRANSFER SKU        |      |            |    | 36.62    | 40.90  | -60,660    | \$22,213.69  |          | \$2,596.25      |       |
| NET AMOUNT ADJUSTED: |                  |           |                     |      |            |    |          |        |            | \$71,958.30- |          | \$8,410.20-     |       |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                   | FORM | -PACKAGE-- | UM | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL # |
|----------------------|------------------|-----------|------------------------|------|------------|----|----------|--------|------------|------------|----------|-----------------|------|
| 01002-007            | PROPYLENE GLYCOL | TECHNICAL | MCKS                   | LIQ  | 055 GL DRM | EA |          |        |            |            |          |                 |      |
| -----AVG COST-----   |                  |           |                        |      |            |    |          |        |            |            |          |                 |      |
| TYP                  | REF-#            | OPID      | REASON                 |      |            |    | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL # |
| PCR                  |                  | CUI       | FROM NOM               |      |            |    | 199.11   | 198.99 | +18        | \$3,581.82 | 13116500 |                 |      |
|                      |                  | CUI       | TPD 12401 RCD IN ERRJR |      |            |    | 199.11   | 198.99 | +25        | \$4,974.75 |          |                 |      |
| NET AMOUNT ADJUSTED: |                  |           |                        |      |            |    |          |        |            | \$8,556.57 |          |                 |      |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD             | FORM | -PACKAGE-- | UM | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL # |
|----------------------|------------------|-----------|------------------|------|------------|----|----------|--------|------------|-------------|----------|-----------------|------|
| 01002-019            | PROPYLENE GLYCOL | MCKS      | *                | LIQ  | 055 GL NOM | EA |          |        |            |             |          |                 |      |
| -----AVG COST-----   |                  |           |                  |      |            |    |          |        |            |             |          |                 |      |
| TYP                  | REF-#            | OPID      | REASON           |      |            |    | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL # |
| PCR                  |                  | CUI       | FRES BOUGHT WRNG |      |            |    | 189.51   | 204.03 | -18        | \$3,688.74  | 13116500 |                 |      |
| NET AMOUNT ADJUSTED: |                  |           |                  |      |            |    |          |        |            | \$3,688.74- |          |                 |      |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                     | FORM | -PACKAGE-- | UM | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|----------------------|-----------|-----------|--------------------------|------|------------|----|----------|--------|------------|------------|---|-----------------|------|
| 01011-002            | CHLORINE  |           | *                        | GAS  | 001 LB BLK | LB |          |        |            |            |   |                 |      |
| -----AVG COST-----   |           |           |                          |      |            |    |          |        |            |            |   |                 |      |
| TYP                  | REF-#     | OPID      | REASON                   |      |            |    | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL # <td>AMT-ADJUST-DIFF</td> <td>GL #</td> | AMT-ADJUST-DIFF | GL # |
| OHQ                  |           | CUI       | MTL GAIN-DUE TO BLCH MKG |      |            |    | 7.65     | 7.61   | +41,549    | \$3,161.88 | 59417                                       |                 |      |
| NET AMOUNT ADJUSTED: |           |           |                          |      |            |    |          |        |            | \$3,161.88 |   |                 |      |

| PROD-CD            | PROD-NAME  | QUALIFIER | GRAD      | FORM | -PACKAGE-- | UM | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL #  |
|--------------------|------------|-----------|-----------|------|------------|----|----------|--------|------------|------------|---|-----------------|-------|
| 01011-002          | CHLORINE   |           | *         | GAS  | 001 LB BLK | LB |          |        |            |            |   |                 |       |
| -----AVG COST----- |            |           |           |      |            |    |          |        |            |            |   |                 |       |
| TYP                | REF-#      | OPID      | REASON    |      |            |    | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL # <td>AMT-ADJUST-DIFF</td> <td>GL #</td> | AMT-ADJUST-DIFF | GL #  |
| RPK                | 544-P12340 | CSH       | 37 X 2000 |      |            |    | 7.65     | 7.61   | -74,000    | \$5,661.00 | 13116501                                    | \$29.60         | 59418 |
|                    | 544-P12351 | CSH       | 22 X 2000 |      |            |    | 7.65     | 7.61   | -44,000    | \$3,366.00 |   | \$17.60         |       |

JS 039645

IMK108424

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                     |      |      |         |             |         |
|------------|-----|---------------------|------|------|---------|-------------|---------|
| 544-P12352 | CSH | 16 X 150# CUST CYL  | 7.65 | 7.61 | -2,400  | \$183.60-   | \$0.96- |
| 544-P12371 | CSH | 13 X 2000           | 7.65 | 7.61 | -26,000 | \$1,989.00- | \$10.40 |
| 544-P12391 | CSH | 23 X 2000           | 7.65 | 7.61 | -46,000 | \$3,519.00- | \$18.40 |
| 544-P12402 | CSH | 18 X 2000           | 7.65 | 7.61 | -36,000 | \$2,754.00- | \$14.40 |
| 544-P12405 | CSH | 4 X 2000            | 7.65 | 7.61 | -8,000  | \$612.00-   | \$3.20  |
| 544-P12413 | CTO | 16 X 2000           | 7.65 | 7.61 | -32,000 | \$2,448.00- | \$12.80 |
| 544-P12414 | CTO | 10X150 NORTON AIRP. | 7.65 | 7.61 | -1,500  | \$114.75-   | \$0.60  |
| 544-P12424 | CTO | 2 X 2000            | 7.65 | 7.61 | -4,000  | \$306.00-   | \$1.60  |
| 544-P12425 | CTO | 18 X 2000           | 7.65 | 7.61 | -36,000 | \$2,754.00- | \$14.40 |
| 544-P12433 | CTO | 13 X 2000           | 7.65 | 7.61 | -26,000 | \$1,989.00- | \$10.40 |
| 544-P12434 | CTO | 5 X 2000            | 7.65 | 7.61 | -10,000 | \$765.00-   | \$4.00  |
| 544-P12449 | CTO | 25 X 2000           | 7.65 | 7.61 | -50,000 | \$3,825.00- | \$20.00 |
| 544-P12469 | CTO | 23 X 2000           | 7.65 | 7.61 | -46,000 | \$3,519.00- | \$18.40 |
| 544-P12484 | CTO | 37 X 2000           | 7.65 | 7.61 | -74,000 | \$5,661.00- | \$29.60 |
| 544-P12487 | CTO | BLEACH BLEND        | 7.65 | 7.61 | -19,208 | \$1,469.41- | \$7.68  |
| 544-P12500 | CTO | 18 X 2000 TONS      | 7.65 | 7.61 | -36,000 | \$2,754.00- | \$14.40 |
| 544-P12512 | CTO | 6 X 2000 TONS       | 7.65 | 7.61 | -12,000 | \$918.00-   | \$4.80  |
| 544-P12523 | CTO | 12 X 2000 TONS      | 7.65 | 7.61 | -24,000 | \$1,836.00- | \$9.60  |
| 544-P12539 | CTO | 20 X 2000 TONS      | 7.65 | 7.61 | -40,000 | \$3,060.00- | \$16.00 |
| 544-P12553 | CTO | 16 X 2000 TONS      | 7.65 | 7.61 | -32,000 | \$2,448.00- | \$12.80 |
| 544-P12564 | CTO | 25 X 2000 TONS      | 7.65 | 7.61 | -50,000 | \$3,825.00- | \$20.00 |
| 544-P12575 | CTO | BLEACH BLEND        | 7.65 | 7.61 | -14,000 | \$1,071.00- | \$5.60  |
| 544-P12593 | CTO | 7 X 2000 TONS       | 7.65 | 7.61 | -14,000 | \$1,071.00- | \$5.60  |
| 544-P12594 | CTO | 24 X 2000 TONS      | 7.65 | 7.61 | -48,000 | \$3,672.00- | \$19.20 |
| 544-P12617 | CTO | 24 X 2000 TONS      | 7.65 | 7.61 | -48,000 | \$3,672.00- | \$19.20 |
| 544-P12618 | CTO | BLEACH BLEND        | 7.65 | 7.61 | -12,639 | \$966.88-   | \$5.05  |
| 544-P12633 | CTO | 19 X 2000 TONS      | 7.65 | 7.61 | -38,000 | \$2,907.00- | \$15.20 |
| 544-P12644 | CTO | 18 X 2000 TONS      | 7.65 | 7.61 | -36,000 | \$2,754.00- | \$14.40 |

NET AMOUNT ADJUSTED:

\$71,890.64-

\$375.89

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD | FORM | -PACKAGE-- | UM |
|-----------|-----------|-----------|------|------|------------|----|
| 01011-004 | CHLORTNE  |           | MCKS | GAS  | 150 LB CYL | EA |

-----AVG COST-----

| TYP | REF-#      | OPID | REASON       | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|--------------|----------|--------|------------|------------|----------|-----------------|-------|
| RPK | 544-P12539 | CTO  | 1 TON REPACK | 27.33    | 27.34  | -1         | \$27.33-   | 13116501 | \$0.00          | 59418 |

NET AMOUNT ADJUSTED:

\$27.33-

\$0.00

| PROD-CD   | PROD-NAME   | QUALIFIER | GRAD | FORM | -PACKAGE-- | UM |
|-----------|-------------|-----------|------|------|------------|----|
| 01013-001 | ACETIC ACID | GLACTAL   | 8    | LIQ  | 001 GL BLK | LB |

-----AVG COST-----

| TYP | REF-#      | OPID | REASON              | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|---------------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12243 | CTO  | 75' X 450' DRUMS    | 23.57    | 23.64  | -27,000    | \$6,363.90- | 13116501 | \$18.90-        | 59418 |
|     | 544-P12245 | CTO  | 24 X 450 DRUMS      | 23.57    | 23.64  | -10,000    | \$2,545.56- |          | \$7.56-         |       |
|     | 544-P12463 | CTO  | 2 X 2930 PRK        | 23.57    | 23.64  | -4,688     | \$1,104.96- |          | \$3.28-         |       |
|     | 544-P12536 | CTO  | 8 X 2930 LBS LIQBIN | 23.57    | 23.64  | -18,752    | \$4,419.85- |          | \$13.12-        |       |
|     | 544-P12632 | CTO  | 10 X 2930 FLOBINS   | 23.57    | 23.64  | -23,440    | \$5,524.81- |          | \$16.41-        |       |

NET AMOUNT ADJUSTED:

\$19,959.06-

\$59.27-

JS 039646

PG#1 CK02L21P VER 01.7

DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 18

JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM         |             |          |                 |       |  |  |  |
|----------------------|------------|-----------|-----------------|----------|------------|------------|-------------|----------|-----------------|-------|--|--|--|
|                      |            |           | %               | LIQ      | 001        | GL         | BLK         | LR       |                 |       |  |  |  |
| -----AVG COST-----   |            |           |                 |          |            |            |             |          |                 |       |  |  |  |
| TYP                  | REF-#      | OPID      | REASON          | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |  |
| RPK                  | 544-P12232 | CTD       | 104 X 357 DRUMS | 20.68    | 21.47      | -37,871    | \$7,831.72- | 13116501 | \$450.67-       | 59418 |  |  |  |
|                      | 544-P12537 | CTD       | 90 X 33 PAILS   | 20.68    | 21.87      | -1,683     | \$348.04-   |          | \$20.03-        |       |  |  |  |
| NET AMOUNT ADJUSTED: |            |           |                 |          |            |            | \$8,179.76- |          | \$470.70-       |       |  |  |  |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                    | FORM     | -PACKAGE-- | UM         |            |       |                 |      |  |  |  |
|----------------------|-----------|-----------|-------------------------|----------|------------|------------|------------|-------|-----------------|------|--|--|--|
|                      |           |           | %                       | LIQ      | 001        | GL         | BLK        | LR    |                 |      |  |  |  |
| -----AVG COST-----   |           |           |                         |          |            |            |            |       |                 |      |  |  |  |
| TYP                  | REF-#     | OPID      | REASON                  | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |  |  |  |
| CHD                  |           | CUI       | TO ALW RPK DRW ON 12353 | 38.95    | 38.53      | +1         | \$0.39     | 59417 |                 |      |  |  |  |
| NET AMOUNT ADJUSTED: |           |           |                         |          |            |            | \$0.39     |       |                 |      |  |  |  |

| -----AVG COST-----   |            |      |                       |          |        |            |             |          |                 |       |  |  |  |
|----------------------|------------|------|-----------------------|----------|--------|------------|-------------|----------|-----------------|-------|--|--|--|
| TYP                  | REF-#      | OPID | REASON                | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |  |
| RPK                  | 544-P12284 | CTD  | 15 X 402 DRUMS        | 38.85    | 38.53  | -6,158     | \$2,392.38- | 13116501 | \$19.70         | 59418 |  |  |  |
|                      | 544-P12299 | CTD  | WES SPEC BLEND W18923 | 38.85    | 38.53  | -10,900    | \$4,234.65- |          | \$34.88-        |       |  |  |  |
|                      | 544-P12353 | CTD  | 10X VAR IPO 12353     | 38.85    | 38.53  | -1         | \$0.39-     |          | \$0.00          |       |  |  |  |
|                      | 544-P12356 | CTD  | 1 X 2535 PTK          | 38.85    | 38.53  | -2,662     | \$1,034.19- |          | \$8.52          |       |  |  |  |
| NET AMOUNT ADJUSTED: |            |      |                       |          |        |            | \$7,661.61- |          | \$63.10         |       |  |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                      | FORM     | -PACKAGE-- | UM         |             |          |                 |       |  |  |  |
|----------------------|------------|-----------|---------------------------|----------|------------|------------|-------------|----------|-----------------|-------|--|--|--|
|                      |            |           | %                         | LIQ      | 055        | GL         | DRM         | EA       |                 |       |  |  |  |
| -----AVG COST-----   |            |           |                           |          |            |            |             |          |                 |       |  |  |  |
| TYP                  | REF-#      | OPID      | REASON                    | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |  |
| RPK                  | 544-P12308 | CTD       | MAJOR PAINTY BLEND W18956 | 187.12   | 180.15     | -7         | \$561.36-   | 13116501 | \$20.91         | 59418 |  |  |  |
|                      | 544-P12420 | CTD       | 1 X 2535 BIN              | 137.12   | 130.15     | -7         | \$1,309.84- |          | \$48.79         |       |  |  |  |
| NET AMOUNT ADJUSTED: |            |           |                           |          |            |            | \$1,871.20- |          | \$69.70         |       |  |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                | FORM     | -PACKAGE-- | UM         |            |          |                 |       |  |  |  |
|----------------------|------------|-----------|---------------------|----------|------------|------------|------------|----------|-----------------|-------|--|--|--|
|                      |            |           | MSS                 | SOLN     | 600        | LB         | DRM        | EA       |                 |       |  |  |  |
| -----AVG COST-----   |            |           |                     |          |            |            |            |          |                 |       |  |  |  |
| TYP                  | REF-#      | OPID      | REASON              | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |  |
| RPK                  | 544-P12418 | CTD       | MILLER BLEND W19001 | 434.12   | 434.41     | -1         | \$434.12-  | 13116501 | \$0.29-         | 59418 |  |  |  |
| NET AMOUNT ADJUSTED: |            |           |                     |          |            |            | \$434.12-  |          | \$0.29-         |       |  |  |  |

JS 039647

MKIL08426

PGM: CK02LP1P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 19  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 111

| PROD-CD              | PROD-NAME      | QUALIFIER  | GRAD           | FORM     | -PACKAGE--    | UM         |             |          |                 |       |
|----------------------|----------------|------------|----------------|----------|---------------|------------|-------------|----------|-----------------|-------|
| 01079-004            | DIETHANOLAMINE | LOW FREEZE | *              | LIQ      | 001 GL BLK LB |            |             |          |                 |       |
| -----AVG COST-----   |                |            |                |          |               |            |             |          |                 |       |
| TYP                  | REF-#          | OPID       | REASON         | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12547     | CTD        | 19 X 480 DRUMS | 29.68    | 29.60         | -9,280     | \$2,754.30- | 13116501 | \$7.42          | 59418 |
| NET AMOUNT ADJUSTED: |                |            |                |          |               |            | \$2,754.30- |          | \$7.42          |       |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD            | FORM     | -PACKAGE--    | UM         |             |          |                 |       |
|----------------------|-----------------|-----------|-----------------|----------|---------------|------------|-------------|----------|-----------------|-------|
| 01081-001            | GLYCOL ETHER ER |           | MSS             | LIQ      | 001 GL BLK LB |            |             |          |                 |       |
| -----AVG COST-----   |                 |           |                 |          |               |            |             |          |                 |       |
| TYP                  | REF-#           | OPID      | REASON          | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12419      | CTD       | 3 X 2450 BINS   | 30.99    | 30.99         | -7,497     | \$2,323.32- | 13116501 | \$0.00          | 59418 |
|                      | 544-P12630      | CTD       | 1 X 2450 FL087N | 30.99    | 30.99         | -2,499     | \$774.44-   |          | \$0.00          |       |
| NET AMOUNT ADJUSTED: |                 |           |                 |          |               |            | \$3,097.76- |          | \$0.00          |       |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD                | FORM     | -PACKAGE--    | UM         |            |       |                 |      |
|----------------------|-----------|-----------|---------------------|----------|---------------|------------|------------|-------|-----------------|------|
| 01104-008            | GLYCERINE | 96%       | USP                 | LIQ      | 001 GL BLK LB |            |            |       |                 |      |
| -----AVG COST-----   |           |           |                     |          |               |            |            |       |                 |      |
| TYP                  | REF-#     | OPID      | REASON              | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
| DHO                  |           | CUI       | 5/8 WT VAR ON IPO'S | 87.96    | 88.10         | -295       | \$260.16-  | 59417 |                 |      |
| NET AMOUNT ADJUSTED: |           |           |                     |          |               |            | \$260.16-  |       |                 |      |

| TYP                  | REF-#      | OPID | REASON             | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------|------|--------------------|----------|--------|------------|--------------|----------|-----------------|-------|
| RPK                  | 544-P12416 | CTD  | 48 X 570 DRUMS USP | 87.96    | 88.14  | -27,360    | \$24,065.86- | 13116501 | \$62.92-        | 59418 |
|                      | 544-P12417 | CTD  | 1 X 570 DRUM TECH  | 87.96    | 88.10  | -380       | \$334.25-    |          | \$0.87-         |       |
| NET AMOUNT ADJUSTED: |            |      |                    |          |        |            | \$24,400.11- |          | \$63.79-        |       |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |               |          |                 |       |
|----------------------|------------|-----------|----------------|----------|---------------|------------|---------------|----------|-----------------|-------|
| 01104-011            | GLYCERINE  | 99.5%     | USP            | LIQ      | 001 GL BLK LB |            |               |          |                 |       |
| -----AVG COST-----   |            |           |                |          |               |            |               |          |                 |       |
| TYP                  | REF-#      | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST    | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12275 | CTD       | 1 X 570 DRUM   | 90.22    | 90.34         | -720       | \$649.58-     | 13116501 | \$1.23-         | 59418 |
|                      | 544-P12276 | CTD       | 84 X 570 DRUMS | 90.22    | 90.34         | -47,680    | \$43,197.34-  |          | \$81.39-        |       |
|                      | 544-P12586 | CTD       | 84 X 570 DRUMS | 90.22    | 90.39         | -47,680    | \$43,197.34-  |          | \$81.39-        |       |
|                      | 544-P12587 | CTD       | 1 X 570 DRUMS  | 90.22    | 90.39         | -730       | \$658.61-     |          | \$1.24-         |       |
|                      | 544-P12612 | CTD       | 84 X 570 DRUMS | 90.22    | 90.39         | -47,680    | \$43,197.34-  |          | \$81.39-        |       |
|                      | 544-P12613 | CTD       | 1 X 570 DRUM   | 90.22    | 90.39         | -600       | \$541.32-     |          | \$1.02-         |       |
| NET AMOUNT ADJUSTED: |            |           |                |          |               |            | \$131,441.53- |          | \$247.66-       |       |

JS 039648

MK1108427

PGM: CK02L2IP VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02H25A PAGE: 20  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | PACKAGE       | UN         |              |          |                 |       |
|----------------------|------------|-----------|----------------|----------|---------------|------------|--------------|----------|-----------------|-------|
| 01110-001            | FREON      | TF        | MSS            | LIQ      | 001 GL BLK LB |            |              |          |                 |       |
| -----AVG COST-----   |            |           |                |          |               |            |              |          |                 |       |
| TYP                  | REF-#      | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12195 | CTO       | 220 X 60 CANS  | 91.50    | 91.50         | -13,831    | \$12,655.37- | 13116501 | \$0.00          | 59418 |
|                      | 544-P12386 | CTO       | 62 X 690 DRUMS | 91.50    | 91.50         | -43,636    | \$39,926.94- |          | \$0.00          |       |
| NET AMOUNT ADJUSTED: |            |           |                |          |               |            | \$52,582.31- |          | \$0.00          |       |

| PROD-CD              | PROD-NAME          | QUALIFIER | GRAD           | FORM     | PACKAGE       | UN         |              |          |                 |       |
|----------------------|--------------------|-----------|----------------|----------|---------------|------------|--------------|----------|-----------------|-------|
| 01113-007            | BORAX PENTAHYDRATE | S MOL     | A              | GRAN     | 001 LB BLK LB |            |              |          |                 |       |
| -----AVG COST-----   |                    |           |                |          |               |            |              |          |                 |       |
| TYP                  | REF-#              | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12046         | CTO       | 684 X 100 BAGS | 11.85    | 11.85         | -65,250    | \$7,732.13-  | 13116501 | \$0.00          | 59418 |
|                      | 544-P12046         | CTO       | 900 X 100 BAGS | 11.85    | 11.85         | -90,000    | \$10,665.00- |          | \$0.00          |       |
|                      | 544-P12046         | CTO       | 450 X 100 BAGS | 11.85    | 11.85         | -45,000    | \$5,332.50-  |          | \$0.00          |       |
|                      | 544-P12332         | CTO       | 630 X 100 BAGS | 11.85    | 11.85         | -63,900    | \$7,572.15-  |          | \$0.00          |       |
|                      | 544-P12332         | CTO       | 561 X 100 BAGS | 11.85    | 11.85         | -57,000    | \$6,754.50-  |          | \$0.00          |       |
|                      | 544-P12332         | CTO       | 774 X 100 BAGS | 11.85    | 11.85         | -79,300    | \$9,278.55-  |          | \$0.00          |       |
| NET AMOUNT ADJUSTED: |                    |           |                |          |               |            | \$47,334.83- |          | \$0.00          |       |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                  | FORM     | PACKAGE       | UN         |              |          |                 |       |
|----------------------|------------|-----------|-----------------------|----------|---------------|------------|--------------|----------|-----------------|-------|
| 01120-012            | SODA ASH   | DENSE     | S                     | GRAN     | 001 LB BLK LB |            |              |          |                 |       |
| -----AVG COST-----   |            |           |                       |          |               |            |              |          |                 |       |
| TYP                  | REF-#      | OPID      | REASON                | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P11605 | CTO       | 1107 X 50 STAUF BAGS  | 5.64     | 5.64          | -55,350    | \$3,121.74-  | 13116501 | \$0.00          | 59418 |
|                      | 544-P11606 | CTO       | 2000 X 100 STAUF BAGS | 5.64     | 5.64          | -96,000    | \$5,414.40-  |          | \$0.00          |       |
|                      | 544-P12372 | CTO       | 399 X 50 BAGS         | 5.64     | 5.64          | -19,600    | \$1,105.44-  |          | \$0.00          |       |
|                      | 544-P12513 | CTO       | ACFX 60134            | 5.64     | 5.64          | -60,866    | \$3,432.84-  |          | \$0.00          |       |
|                      | 544-P12514 | CTO       | ACFX 60134            | 5.64     | 5.64          | -50,258    | \$2,834.55-  |          | \$0.00          |       |
|                      | 544-P12514 | CTO       | ACFX 60134            | 5.64     | 5.64          | -50,257    | \$2,834.49-  |          | \$0.00          |       |
|                      | 544-P12595 | CTO       | ACFX 60134            | 5.64     | 5.64          | -38,517    | \$2,172.36-  |          | \$0.00          |       |
|                      | 544-P12650 | CTO       | RC ACFX 47988         | 5.64     | 5.64          | -27,650    | \$1,557.46-  |          | \$0.00          |       |
| NET AMOUNT ADJUSTED: |            |           |                       |          |               |            | \$22,475.28- |          | \$0.00          |       |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                      | FORM     | PACKAGE       | UN         |             |       |                 |      |
|----------------------|------------|-----------|---------------------------|----------|---------------|------------|-------------|-------|-----------------|------|
| 01120-015            | SODA ASH   | DENSE     | MCKS                      | GRAN     | 100 LB BAG EA |            |             |       |                 |      |
| -----AVG COST-----   |            |           |                           |          |               |            |             |       |                 |      |
| TYP                  | REF-#      | OPID      | REASON                    | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST  | GL #  | AMT-ADJUST-DIFF | GL # |
| RCS                  | 544-P11857 | CSH       | TRAN CROW/BVYA080001/5032 | 7.21     | 7.17          | -480       | \$3,460.80- | 12492 |                 |      |
| NET AMOUNT ADJUSTED: |            |           |                           |          |               |            | \$3,460.80- |       |                 |      |

JS 039649

WKIL08428

PGM: CK02L21P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 21  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM         |                    |          |                 |       |
|----------------------|-------------------|-----------|---------------|----------|---------------|------------|--------------------|----------|-----------------|-------|
| 01124-070            | HYDROGEN PEROXIDE | 70% TECH  | MSS           | LIQ      | 001 LB BLK LB |            |                    |          |                 |       |
|                      |                   |           |               |          |               |            | -----AVG COST----- |          |                 |       |
| TYP                  | REF-#             | OPID      | REASON        | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST         | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12368        | CTO       | BLEND TO 50%  | 46.13    | 48.31         | -76,374    | \$35,231.33-       | 13116501 | \$1,664.95-     | 59418 |
|                      | 544-P12435        | CTO       | HYD BLEND 50% | 46.13    | 48.31         | -1         | \$0.46-            |          | \$0.02-         |       |
|                      | 544-P12551        | CTO       | DILUTION      | 46.13    | 48.31         | -59,120    | \$25,426.86-       |          | \$1,201.61-     |       |
| NET AMOUNT ADJUSTED: |                   |           |               |          |               |            | \$60,658.65-       |          | \$2,866.58-     |       |

| PROD-CD              | PROD-NAME         | QUALIFIER   | GRAD                       | FORM     | -PACKAGE--    | UM         |                    |          |                 |      |
|----------------------|-------------------|-------------|----------------------------|----------|---------------|------------|--------------------|----------|-----------------|------|
| 01124-080            | HYDROGEN PEROXIDE | 33% SUPER O | MCKS                       | LIQ      | 055 GL RDM EA |            |                    |          |                 |      |
|                      |                   |             |                            |          |               |            | -----AVG COST----- |          |                 |      |
| TYP                  | REF-#             | OPID        | REASON                     | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST         | GL #     | AMT-ADJUST-DIFF | GL # |
| PCR                  |                   | CUI         | IPD 12401 ENTERED IN ERROR | 173.82   | 191.04        | -25        | \$4,526.00-        | 13116500 |                 |      |
| NET AMOUNT ADJUSTED: |                   |             |                            |          |               |            | \$4,526.00-        |          |                 |      |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |                    |          |                 |       |
|----------------------|-------------------|-----------|-------------------|----------|---------------|------------|--------------------|----------|-----------------|-------|
| 01125-001            | HYDROCHLORIC ACID | 20 BE     |                   | LIQ      | 001 LB BLK LB |            |                    |          |                 |       |
|                      |                   |           |                   |          |               |            | -----AVG COST----- |          |                 |       |
| TYP                  | REF-#             | OPID      | REASON            | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST         | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12170        | CTO       | 65 X 500 DRUMS    | 3.65     | 3.62          | -32,500    | \$1,186.25-        | 13116501 | \$9.75-         | 59418 |
|                      | 544-P12171        | CTO       | 99 X 140 CARBOYS  | 3.65     | 3.62          | -13,860    | \$505.89-          |          | \$4.16-         |       |
|                      | 544-P12301        | CTO       | 154 X 500 DRUMS   | 3.65     | 3.62          | -77,000    | \$2,810.50-        |          | \$23.10-        |       |
|                      | 544-P12302        | CTO       | 151 X 140 CARBOYS | 3.65     | 3.62          | -21,140    | \$771.61-          |          | \$6.34-         |       |
| NET AMOUNT ADJUSTED: |                   |           |                   |          |               |            | \$5,274.25-        |          | \$43.35         |       |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD          | FORM     | -PACKAGE--    | UM         |                    |       |                 |      |
|----------------------|-------------------|-----------|---------------|----------|---------------|------------|--------------------|-------|-----------------|------|
| 01125-012            | HYDROCHLORIC ACID | 20 BE     | MCKS          | LIQ      | 015 GL CBY EA |            |                    |       |                 |      |
|                      |                   |           |               |          |               |            | -----AVG COST----- |       |                 |      |
| TYP                  | REF-#             | OPID      | REASON        | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST         | GL #  | AMT-ADJUST-DIFF | GL # |
| OMD                  |                   | CUI       | PHYSICAL-GAIN | 9.87     | 9.51          | +14        | \$133.14           | 59417 |                 |      |
| NET AMOUNT ADJUSTED: |                   |           |               |          |               |            | \$133.14           |       |                 |      |

JS 039650

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD                   | FORM     | -PACKAGE--    | UM         |                    |          |                 |       |
|----------------------|------------------|-----------|------------------------|----------|---------------|------------|--------------------|----------|-----------------|-------|
| 01143-002            | SODIUM GLUCONATE |           |                        | FNGR     | 050 LB BAG EA |            |                    |          |                 |       |
|                      |                  |           |                        |          |               |            | -----AVG COST----- |          |                 |       |
| TYP                  | REF-#            | OPID      | REASON                 | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST         | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12324       | CTO       | MILL B. BLEND W18972   | 27.92    | 27.14         | -7         | \$195.44-          | 13116501 | \$5.46          | 59418 |
|                      | 544-P12339       | CTO       | INT. EXT. BLEND W18975 | 27.92    | 27.14         | -15        | \$418.80-          |          | \$11.70         |       |
|                      | 544-P12418       | CTO       | MILLER BLEND W19081    | 27.92    | 27.14         | -7         | \$195.44-          |          | \$5.46          |       |
|                      | 544-P12468       | CTO       | BAUSCH W19182          | 27.92    | 27.14         | -19        | \$530.48-          |          | \$14.82         |       |
|                      | 544-P12549       | CTO       | INT. EXT. BLEND W19292 | 27.92    | 27.14         | -16        | \$446.72-          |          | \$12.48         |       |
| NET AMOUNT ADJUSTED: |                  |           |                        |          |               |            | \$1,786.88-        |          | \$49.92         |       |

WKL08429

CK02L2IP VER 01.7  
L1: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 22  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME           | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM         |             |          |                 |       |
|----------------------|---------------------|-----------|-----------------|----------|------------|------------|-------------|----------|-----------------|-------|
| 01147-022            | SODIUM HYPOCHLORITE | 12.5%     | MCKS            | LIQ      | 001 GL BLK | LB         |             |          |                 |       |
| -----AVG COST-----   |                     |           |                 |          |            |            |             |          |                 |       |
| TYP                  | REF-#               | OPID      | REASON          | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12395          | CTO       | 100 X 550 DRUMS | 3.04     | 2.99       | -55,000    | \$1,672.00- | 13116501 | \$27.50         | 59418 |
|                      | 544-P12401          | CTO       | 92 X 550 DRUMS  | 1.04     | 2.99       | -50,600    | \$1,538.24- |          | \$25.30         |       |
|                      | 544-P12615          | CTO       | 88 X 550 DRUMS  | 3.04     | 2.99       | -48,400    | \$1,471.36- |          | \$24.20         |       |
| NET AMOUNT ADJUSTED: |                     |           |                 |          |            |            | \$4,681.60- |          | \$77.00         |       |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |             |          |                 |      |
|----------------------|--------------------------|-----------|-----------------------|----------|------------|------------|-------------|----------|-----------------|------|
| 01154-007            | SODIUM SULFATE ANHYDROUS |           | MCKS                  | GRAN     | 100 LB BAG | EA         |             |          |                 |      |
| -----AVG COST-----   |                          |           |                       |          |            |            |             |          |                 |      |
| TYP                  | REF-#                    | OPID      | REASON                | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL # |
| PCR                  |                          | CUI       | IPD 12047 S/E 50% BGS | 7.25     | 6.94       | -1,127     | \$7,708.68- | 13116500 |                 |      |
| NET AMOUNT ADJUSTED: |                          |           |                       |          |            |            | \$7,708.68- |          |                 |      |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |              |          |                 |       |
|----------------------|--------------------------|-----------|--------------------|----------|------------|------------|--------------|----------|-----------------|-------|
| 01154-010            | SODIUM SULFATE ANHYDROUS | ANHYD     |                    | GRAN     | 001 LB BLK | LB         |              |          |                 |       |
| -----AVG COST-----   |                          |           |                    |          |            |            |              |          |                 |       |
| TYP                  | REF-#                    | OPID      | REASON             | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12047               | CTO       | 1127 X 50 BAGS     | 6.19     | 6.53       | -56,350    | \$3,488.07-  | 13116501 | \$191.59-       | 59418 |
|                      | 544-P12452               | CTO       | 2009 X 50 LB BAGS  | 6.19     | 6.53       | -99,135    | \$6,136.46-  |          | \$337.06-       |       |
|                      | 544-P12465               | CTO       | 1056 X 100 LB BAGS | 6.19     | 6.53       | -26,071    | \$1,613.79-  |          | \$88.65-        |       |
|                      | 544-P12465               | CTO       | 1056 X 100 LB BAGS | 6.19     | 6.53       | -26,072    | \$1,613.86-  |          | \$88.64-        |       |
|                      | 544-P12465               | CTO       | 1056 X 100 BAGS    | 6.19     | 6.53       | -26,071    | \$1,613.79-  |          | \$88.65-        |       |
|                      | 544-P12465               | CTO       | 1056 X 100 BAGS    | 6.19     | 6.53       | -26,071    | \$1,613.79-  |          | \$88.65-        |       |
|                      | 544-P12471               | CTO       | 2617 X 50 BAGS     | 6.19     | 6.53       | -65,925    | \$4,080.76-  |          | \$224.14-       |       |
|                      | 544-P12471               | CTO       | 2617 X 50 BAGS     | 6.19     | 6.53       | -65,925    | \$4,080.76-  |          | \$224.14-       |       |
| NET AMOUNT ADJUSTED: |                          |           |                    |          |            |            | \$24,241.28- |          | \$1,331.52-     |       |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD               | FORM     | -PACKAGE-- | UM         |            |          |                 |      |
|----------------------|--------------------------|-----------|--------------------|----------|------------|------------|------------|----------|-----------------|------|
| 01154-011            | SODIUM SULFATE ANHYDROUS |           | MCKS               | GRAN     | 050 LB BAG | EA         |            |          |                 |      |
| -----AVG COST-----   |                          |           |                    |          |            |            |            |          |                 |      |
| TYP                  | REF-#                    | OPID      | REASON             | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL # |
| PCR                  |                          | CUI       | IPD 12047 RCD WRNG | 3.56     | 3.81       | +1,127     | \$4,293.87 | 13116500 |                 |      |
| NET AMOUNT ADJUSTED: |                          |           |                    |          |            |            | \$4,293.87 |          |                 |      |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |             |          |                 |       |
|----------------------|-----------------|-----------|----------------|----------|------------|------------|-------------|----------|-----------------|-------|
| 01158-027            | SODIUM SILICATE | N         |                | LIQ      | 001 LB BLK | LB         |             |          |                 |       |
| -----AVG COST-----   |                 |           |                |          |            |            |             |          |                 |       |
| TYP                  | REF-#           | OPID      | REASON         | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
| RPK                  | 544-P12209      | CTO       | 71 X 635 DRUMS | 6.60     | 6.62       | -45,690    | \$3,015.54- | 13116501 | \$9.14-         | 59418 |
| NET AMOUNT ADJUSTED: |                 |           |                |          |            |            | \$3,015.54- |          | \$9.14-         |       |

JS 039651

WKL08430

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: S11

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01162-001 METHYL ETHYL KETONE

| TYP                  | REF-#      | OPID | REASON                 | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------|------|------------------------|----------|--------|------------|--------------|----------|-----------------|-------|
| RPK                  | 544-P12249 | CTO  | 100 X 366 DRUMS        | 25.60    | 25.60  | -37,332    | 19,556.99-   | 13116501 | \$0.00          | 59418 |
|                      | 544-P12299 | CTO  | WEST SPEC BLEND W18923 | 25.60    | 25.60  | -5,427     | 11,389.31-   |          | \$0.00          |       |
|                      | 544-P12313 | CTO  | 1 X 2500 PK            | 25.60    | 25.60  | -2,550     | \$652.80-    |          | \$0.00          |       |
|                      | 544-P12421 | CTO  | 10 X 366 DRUMS         | 25.60    | 25.60  | -3,733     | \$955.65-    |          | \$0.00          |       |
|                      | 544-P12482 | CTO  | 50 X 33 LBS CARBOYS    | 25.60    | 25.60  | -1,683     | \$430.85-    |          | \$0.00          |       |
|                      | 544-P12494 | CTO  | 37 X 540 DRUMS         | 25.60    | 25.60  | -597       | \$178.43-    |          | \$0.00          |       |
|                      | 544-P12527 | CTO  | 1 P/F 58 IPO 12494     | 25.60    | 25.60  | -20        | \$5.12-      |          | \$0.00          |       |
|                      | 544-P12610 | CTO  | 150 X 366 DRUMS        | 25.60    | 25.60  | -55,998    | \$14,335.49- |          | \$0.00          |       |
| NET AMOUNT ADJUSTED: |            |      |                        |          |        |            | \$27,504.64- |          | \$0.00          |       |

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01170-003 MONOETHANOLAMINE LOW FREEZE

| TYP                  | REF-#      | OPID | REASON         | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------|------|----------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK                  | 544-P12396 | CTO  | 36 X 460 DRUMS | 29.71    | 29.75  | -16,840    | \$5,003.16- | 13116501 | \$161.66        | 59418 |
| NET AMOUNT ADJUSTED: |            |      |                |          |        |            | \$5,003.16- |          | \$161.66        |       |

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01172-001 PHOSPHORIC ACID 75%

| TYP                  | REF-#      | OPID | REASON           | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------|------|------------------|----------|--------|------------|--------------|----------|-----------------|-------|
| RPK                  | 544-P12223 | CTO  | 50 X 700 DRUMS   | 26.81    | 26.50  | -35,000    | \$9,383.50-  | 13116501 | \$591.50-       | 59418 |
|                      | 544-P12224 | CTO  | 23 X 700 CARBOYS | 26.81    | 26.50  | -4,022     | \$1,078.30-  |          | \$67.97-        |       |
| NET AMOUNT ADJUSTED: |            |      |                  |          |        |            | \$10,461.80- |          | \$659.47-       |       |

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01189-001 NITRIC ACID 42 BE

| TYP                  | REF-#      | OPID | REASON              | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|----------------------|------------|------|---------------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK                  | 544-P12254 | CTO  | 75 X 600 SS DRUMS   | 8.84     | 8.83   | -45,000    | \$3,978.00- | 13116501 | \$4.50          | 59418 |
|                      | 544-P12256 | CTO  | 96 X 95 LBS CARBOYS | 8.84     | 8.83   | -9,120     | \$806.21-   |          | \$0.91          |       |
|                      | 544-P12477 | CTO  | 90 X 600 DRUMS      | 8.84     | 8.83   | -54,000    | \$4,773.60- |          | \$5.40          |       |
| NET AMOUNT ADJUSTED: |            |      |                     |          |        |            | \$9,557.81- |          | \$10.81         |       |

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01212-005 PERCHLOROETHYLENE

| TYP | REF-#      | OPID | REASON         | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|----------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12204 | CTO  | 20 X 700 DRUMS | 24.20    | 24.17  | -14,280    | \$3,455.76- | 13116501 | \$4.28          | 59418 |
|     | 544-P12346 | CTO  | 5 X 700 DRUMS  | 24.20    | 24.17  | -3,570     | \$863.94-   |          | \$1.07          |       |

JS 039652

PGM: CK02L2IP VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 24  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$4,319.70- \$5.35

| PROD-CD            | PROD-NAME         | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |             |          |                 |       |  |  |
|--------------------|-------------------|-----------|----------------|----------|------------|------------|-------------|----------|-----------------|-------|--|--|
| 01223-001          | DISTHYLENE GLYCOL |           | *              | LIQ      | 001 GL BLK | LB         |             |          |                 |       |  |  |
| -----AVG COST----- |                   |           |                |          |            |            |             |          |                 |       |  |  |
| TYP                | REF-#             | OPID      | REASON         | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                | 544-P12252        | CTO       | 81 X 520 DRUMS | 21.51    | 21.93      | -42,020    | \$9,038.50- | 13116501 | \$176.49-       | 59418 |  |  |

NET AMOUNT ADJUSTED: \$9,038.50- \$176.49-

| PROD-CD            | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |              |          |                 |       |  |  |
|--------------------|-----------------|-----------|----------------|----------|------------|------------|--------------|----------|-----------------|-------|--|--|
| 01224-001          | HEXYLENE GLYCOL |           | *              | LIQ      | 001 GL BLK | LB         |              |          |                 |       |  |  |
| -----AVG COST----- |                 |           |                |          |            |            |              |          |                 |       |  |  |
| TYP                | REF-#           | OPID      | REASON         | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                | 544-P12207      | CTO       | 72 X 427 DRUMS | 60.77    | 61.13      | -70,640    | \$18,626.09- | 13116501 | \$104.17-       | 59418 |  |  |

NET AMOUNT ADJUSTED: \$18,626.09- \$104.17-

| PROD-CD            | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |             |          |                 |       |  |  |
|--------------------|-----------------|-----------|----------------|----------|------------|------------|-------------|----------|-----------------|-------|--|--|
| 01225-001          | ETHYLENE GLYCOL |           | *              | LIQ      | 001 GL BLK | LB         |             |          |                 |       |  |  |
| -----AVG COST----- |                 |           |                |          |            |            |             |          |                 |       |  |  |
| TYP                | REF-#           | OPID      | REASON         | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                | 544-P12238      | CTO       | 84 X 519 DRUMS | 21.95    | 22.99      | -43,596    | \$9,569.32- | 13116501 | \$453.40-       | 59418 |  |  |
|                    | 544-P12548      | CTO       | 40 X 519 DRUMS | 21.95    | 22.99      | -20,906    | \$4,598.87- |          | \$217.42-       |       |  |  |

NET AMOUNT ADJUSTED: \$14,168.19- \$670.82-

| PROD-CD            | PROD-NAME          | QUALIFIER | GRAD           | FORM     | -PACKAGE-- | UM         |             |          |                 |       |  |  |
|--------------------|--------------------|-----------|----------------|----------|------------|------------|-------------|----------|-----------------|-------|--|--|
| 01226-004          | DIPROPYLENE GLYCOL |           | *              | LIQ      | 001 GL BLK | LB         |             |          |                 |       |  |  |
| -----AVG COST----- |                    |           |                |          |            |            |             |          |                 |       |  |  |
| TYP                | REF-#              | OPID      | REASON         | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                | 544-P12246         | CTO       | 35 X 474 DRUMS | 37.22    | 38.41      | -16,867    | \$6,623.03- | 13116501 | \$69.24         | 59418 |  |  |

NET AMOUNT ADJUSTED: \$6,623.03- \$69.24

| PROD-CD            | PROD-NAME          | QUALIFIER | GRAD                  | FORM     | -PACKAGE-- | UM         |            |          |                 |       |  |  |
|--------------------|--------------------|-----------|-----------------------|----------|------------|------------|------------|----------|-----------------|-------|--|--|
| 01229-003          | METHYLENE CHLORIDE |           | *                     | LIQ      | 001 GL BLK | LB         |            |          |                 |       |  |  |
| -----AVG COST----- |                    |           |                       |          |            |            |            |          |                 |       |  |  |
| TYP                | REF-#              | OPID      | REASON                | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                | 544-P12561         | CTO       | ANDERSON BLEND V19379 | 23.35    | 22.98      | -1,854     | \$432.91-  | 13116501 | \$6.85          | 59418 |  |  |

NET AMOUNT ADJUSTED: \$432.91- \$6.85

JS 039653

MMKL08432

PGM: CK02L2IP VER 01-7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 25  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                     | FORM     | PACKAGE       | UM         |             |          |                 |       |  |  |
|----------------------|------------|-----------|--------------------------|----------|---------------|------------|-------------|----------|-----------------|-------|--|--|
| 01233-001            | XYLENE     |           | *                        | LIQ      | 001 GL BLK LB |            |             |          |                 |       |  |  |
| TYP                  | REF-#      | OPID      | REASON                   | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                  | 544-P12308 | CTD       | MAJOR PAINT BLEND W18956 | 20.55    | 19.80         | -2,004     | \$411.82-   | 13116501 | \$13.22         | 59418 |  |  |
|                      | 544-P12628 | CTD       | 102 X 390 DRUMS          | 20.55    | 19.80         | -40,576    | \$8,339.37- |          | \$267.80        |       |  |  |
| NET AMOUNT ADJUSTED: |            |           |                          |          |               |            | \$8,750.19- |          | \$281.02        |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD                     | FORM     | PACKAGE       | UM         |              |          |                 |       |  |  |
|----------------------|------------|-----------|--------------------------|----------|---------------|------------|--------------|----------|-----------------|-------|--|--|
| 01236-002            | TOLUENE    |           | *                        | LIQ      | 001 GL BLK LB |            |              |          |                 |       |  |  |
| TYP                  | REF-#      | OPID      | REASON                   | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                  | 544-P12299 | CTD       | WEST SEPC BLEND W18923   | 19.81    | 19.52         | -7,669     | \$1,519.23-  | 13116501 | \$22.24         | 59418 |  |  |
|                      | 544-P12308 | CTD       | MAJOR PAINT BLEND W18956 | 19.81    | 19.52         | -2,146     | \$425.12-    |          | \$6.22          |       |  |  |
|                      | 544-P12355 | CTD       | 1 X 2200 PTK             | 19.81    | 19.52         | -2,244     | \$444.54-    |          | \$6.51          |       |  |  |
|                      | 544-P12362 | CTD       | SEE IPO 12354            | 19.81    | 19.52         | -1,000     | \$198.10-    |          | \$2.90          |       |  |  |
|                      | 544-P12362 | CTD       | 100 X 390 DRUMS          | 19.81    | 19.52         | -63,648    | \$12,608.67- |          | \$184.58        |       |  |  |
|                      | 544-P12427 | CTD       | RELANCE BLEND #269       | 19.81    | 19.52         | -1,434     | \$284.00-    |          | \$4.16          |       |  |  |
| NET AMOUNT ADJUSTED: |            |           |                          |          |               |            | \$15,479.74- |          | \$228.61        |       |  |  |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD                     | FORM     | PACKAGE       | UM         |              |          |                 |       |  |  |
|----------------------|-------------------|-----------|--------------------------|----------|---------------|------------|--------------|----------|-----------------|-------|--|--|
| 01238-001            | ISOPROPYL ALCOHOL | 99%       | *                        | LIQ      | 001 LB BLK LB |            |              |          |                 |       |  |  |
| TYP                  | REF-#             | OPID      | REASON                   | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                  | 544-P12290        | CTD       | 72 X 355 DRUMS           | 23.61    | 24.57         | -26,071    | \$6,155.36-  | 13116501 | \$250.28-       | 59418 |  |  |
|                      | 544-P12260        | CTD       | 28 X 355 DRUMS           | 23.61    | 24.57         | -10,139    | \$2,393.82-  |          | \$97.33-        |       |  |  |
|                      | 544-P12299        | CTD       | WEST SEPC BLEND W18923   | 23.61    | 24.57         | -2,664     | \$676.19-    |          | \$27.49-        |       |  |  |
|                      | 544-P12308        | CTD       | MAJOR PAINT BLEND W18956 | 23.61    | 24.57         | -10,081    | \$2,380.12-  |          | \$96.73-        |       |  |  |
|                      | 544-P12354        | CTD       | 10X VAR IPO 12308        | 23.61    | 24.57         | -1         | \$0.24-      |          | \$0.01-         |       |  |  |
|                      | 544-P12366        | CTD       | 20 X 355 DRUMS           | 23.61    | 24.57         | -7,242     | \$1,709.94-  |          | \$69.52-        |       |  |  |
|                      | 544-P12494        | CTD       | 37 X 540 DRUMS           | 23.61    | 24.57         | -1,491     | \$352.03-    |          | \$14.31-        |       |  |  |
|                      | 544-P12527        | CTD       | 1 P/F 58 IPO 12494       | 23.61    | 24.57         | -60        | \$14.17-     |          | \$0.57-         |       |  |  |
|                      | 544-P12577        | CTD       | 200 X 355 DRUMS          | 23.61    | 24.57         | -72,820    | \$17,098.36- |          | \$695.23-       |       |  |  |
|                      | 544-P12578        | CTD       | 50 X 33.5 GAL CANS       | 23.61    | 24.57         | -1,683     | \$397.36-    |          | \$16.15-        |       |  |  |
|                      | 544-P12631        | CTD       | 1 X 2160 FLOBBIN         | 23.61    | 24.57         | -2,592     | \$611.97-    |          | \$24.88-        |       |  |  |
| NET AMOUNT ADJUSTED: |                   |           |                          |          |               |            | \$31,739.46- |          | \$1,292.55-     |       |  |  |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | PACKAGE       | UM         |              |          |                 |       |  |  |
|----------------------|------------|-----------|----------------|----------|---------------|------------|--------------|----------|-----------------|-------|--|--|
| 01241-003            | MORPHOLINE |           | *              | LIQ      | 001 GL BLK LB |            |              |          |                 |       |  |  |
| TYP                  | REF-#      | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |  |  |
| RPK                  | 544-P12323 | CTD       | 72 X 460 DRUMS | 81.75    | 81.40         | -33,360    | \$27,271.80- | 13116501 | \$116.76        | 59418 |  |  |
| NET AMOUNT ADJUSTED: |            |           |                |          |               |            | \$27,271.80- |          | \$116.76        |       |  |  |

JS 039654

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MPGM: CK02L2IP VLR 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 26  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01245-003 TRIETHANOLAMINE 85X LOW FZ S LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON           | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|------------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12546 | CTD  | 44 X 510 N.DRUMS | 34.00    | 30.40  | -22,500    | \$7,650.00- | 13116501 | \$310.00        | 59418 |

NET AMOUNT ADJUSTED:

\$7,650.00-

\$310.00

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01245-011 TRIETHANOLAMINE 85X S LIQ 001 LB BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON         | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|----------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12558 | CTD  | 36 X 510 DRUMS | 35.90    | 35.81  | -18,440    | \$6,619.96- | 13116501 | \$116.60        | 59418 |

NET AMOUNT ADJUSTED:

\$6,619.96-

\$116.60

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01248-002 ISOBUTYL ALCOHOL # CHLORO SM S LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON              | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|---------------------|----------|--------|------------|------------|----------|-----------------|-------|
| RPK | 544-P12203 | CTD  | 2 X 369 DRUMS       | 23.71    | 24.74  | -734       | \$174.99-  | 13116501 | \$7.60-         | 59418 |
|     | 544-P12427 | CTD  | RELIANCE BLEND #269 | 23.71    | 24.74  | -2,622     | \$621.68-  |          | \$27.00-        |       |

NET AMOUNT ADJUSTED:

\$796.66-

\$34.60-

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01260-009 1,1,1 TRICHLOROETHANE CHLORO SM MSS LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON          | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|-----------------|----------|--------|------------|--------------|----------|-----------------|-------|
| RPK | 544-P12325 | CTD  | 100 X 592 DRUMS | 38.01    | 36.72  | -60,384    | \$22,951.96- | 13116501 | \$778.96        | 59418 |
|     | 544-P12350 | CTD  | 50 X 592 DRUMS  | 38.01    | 36.72  | -30,192    | \$11,475.98- |          | \$389.48        |       |
|     | 544-P12481 | CTD  | 51 X 592 DRUMS  | 38.01    | 36.72  | -30,796    | \$11,705.56- |          | \$397.27        |       |

NET AMOUNT ADJUSTED:

\$46,133.50-

\$1,565.71

PROD-CD PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01260-022 1,1,1 TRICHLOROETHANE VOC S LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON             | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|--------------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12494 | CTD  | 37 X 540 DRUMS     | 38.05    | 35.42  | -16,451    | \$6,259.61- | 13116501 | \$432.07        | 59418 |
|     | 544-P12527 | CTD  | 1 P/F 58 IPO 12494 | 38.05    | 35.42  | -200       | \$76.10-    |          | \$5.26          |       |
|     | 544-P12543 | CTD  | 30 X 604 CUS.DRUMS | 38.05    | 35.42  | -18,402    | \$7,037.40- |          | \$486.08        |       |

NET AMOUNT ADJUSTED:

\$13,368.11-

\$924.01

JS 039655

MKL108434

PGM: CK02L21P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 27  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: SII

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD | FORM | PACKAGE    | UM | -----AVG COST----- |        |            |            |       |                 |      |
|----------------------|-----------------------|-----------|------|------|------------|----|--------------------|--------|------------|------------|-------|-----------------|------|
| 01260-031            | 1,1,1 TRICHLOROETHANE | CMLOD SM  | MCKS | LIQ  | 055 GL DRM | EA | STARTING           | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|                      |                       |           |      |      |            |    | 244.14             | 249.20 | -2         | \$498.40-  | 59417 |                 |      |
| NET AMOUNT ADJUSTED: |                       |           |      |      |            |    |                    |        |            | \$498.40-  |       |                 |      |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD | FORM | PACKAGE    | UM | -----AVG COST----- |        |            |             |          |                 |       |
|----------------------|-----------------|-----------|------|------|------------|----|--------------------|--------|------------|-------------|----------|-----------------|-------|
| 01265-001            | STYRENE MONOMER |           | *    | LIQ  | 001 GL BLK | LB | STARTING           | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|                      |                 |           |      |      |            |    | 30.95              | 31.43  | -7,520     | \$2,327.44- | 13116501 | \$36.10-        | 59418 |
| NET AMOUNT ADJUSTED: |                 |           |      |      |            |    |                    |        |            | \$2,327.44- | \$36.10- |                 |       |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD | FORM | PACKAGE    | UM | -----AVG COST----- |        |            |             |          |                 |       |
|----------------------|-----------|-----------|------|------|------------|----|--------------------|--------|------------|-------------|----------|-----------------|-------|
| 01281-009            | NEODOL    | 25-1      | *    | LIQ  | 001 LB BLK | LB | STARTING           | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|                      |           |           |      |      |            |    | 47.35              | 47.13  | -8,330     | \$3,944.26- | 13116501 | \$18.33         | 59418 |
| NET AMOUNT ADJUSTED: |           |           |      |      |            |    |                    |        |            | \$3,944.26- | \$18.33  |                 |       |

| PROD-CD              | PROD-NAME | QUALIFIER | GRAD | FORM | PACKAGE    | UM | -----AVG COST----- |        |            |             |          |                 |       |
|----------------------|-----------|-----------|------|------|------------|----|--------------------|--------|------------|-------------|----------|-----------------|-------|
| 01281-011            | NEODOL    | 25-9      | *    | LIQ  | 001 GL BLK | LB | STARTING           | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|                      |           |           |      |      |            |    | 47.54              | 47.54  | -7,000     | \$3,327.80- | 13116501 | \$0.00          | 59418 |
| NET AMOUNT ADJUSTED: |           |           |      |      |            |    |                    |        |            | \$3,327.80- | \$0.00   |                 |       |

| PROD-CD              | PROD-NAME    | QUALIFIER | GRAD | FORM | PACKAGE    | UM | -----AVG COST----- |        |            |            |       |                 |      |
|----------------------|--------------|-----------|------|------|------------|----|--------------------|--------|------------|------------|-------|-----------------|------|
| 01282-020            | CAUSTIC SODA |           | *    | BEAD | 001 LB BLK | LB | STARTING           | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|                      |              |           |      |      |            |    | 15.96              | 15.99  | +60,441    | \$9,664.52 | 59417 |                 |      |
| NET AMOUNT ADJUSTED: |              |           |      |      |            |    |                    |        |            | \$9,664.52 |       |                 |      |

| TYP | REF-#      | OPID | REASON           | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|------------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12202 | CTD  | 80 X 500 DRUMS   | 15.96    | 15.99  | -40,000    | \$6,384.00- | 13116501 | \$12.00-        | 59418 |
|     | 544-P12310 | CTD  | 80 X 500 DRUMS   | 15.96    | 15.99  | -40,000    | \$6,384.00- |          | \$12.00-        |       |
|     | 544-P12317 | CTD  | 12 X 3000 FLOBIN | 15.96    | 15.99  | -36,000    | \$5,745.60- |          | \$10.00-        |       |
|     | 544-P12318 | CTD  | 80 X 500 DRUMS   | 15.96    | 15.99  | -40,000    | \$6,384.00- |          | \$12.00-        |       |
|     | 544-P12319 | CTD  | 33 X 500 DRUMS   | 15.96    | 15.99  | -16,500    | \$2,633.40- |          | \$4.95-         |       |
|     | 544-P12319 | CTD  | 47 X 500 DRUMS   | 15.96    | 15.99  | -23,500    | \$3,750.60- |          | \$7.05-         |       |

JS 039656

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                     |       |       |         |             |          |
|------------|-----|---------------------|-------|-------|---------|-------------|----------|
| 544-P12343 | CTO | 80 X 500 DRUMS      | 15.96 | 15.99 | -40,000 | \$6,384.00- | \$12.00- |
| 544-P12377 | CTO | 23 X 500 F.DRUMS    | 15.96 | 15.99 | -11,500 | \$1,835.40- | \$3.45-  |
| 544-P12430 | CTO | 42 X 500 DRUMS BOLL | 15.96 | 15.99 | -21,000 | \$3,351.60- | \$6.30-  |
| 544-P12431 | CTO | 80 X 500 DRUMS      | 15.96 | 15.99 | -40,000 | \$6,384.00- | \$12.00- |
| 544-P12432 | CTO | 84 X 500 DRUMS      | 15.96 | 15.99 | -42,000 | \$6,703.20- | \$12.60- |
| 544-P12451 | CTO | 27 X 500 DRUMS      | 15.96 | 15.99 | -13,500 | \$2,154.60- | \$4.05-  |
| 544-P12501 | CTO | 80 X 500 DRUMS      | 15.96 | 15.99 | -40,000 | \$6,384.00- | \$12.00- |
| 544-P12502 | CTO | 80 X 500 DRUMS      | 15.96 | 15.99 | -40,000 | \$6,384.00- | \$12.00- |
| 544-P12540 | CTO | 80 X 500 DRUMS      | 15.96 | 15.99 | -40,000 | \$6,384.00- | \$12.00- |
| 544-P12596 | CTO | 14 X 3000 FLOBBINS  | 15.96 | 15.99 | -40,000 | \$6,703.20- | \$12.60- |

NET AMOUNT ADJUSTED:

\$83,944.60-

\$157.80-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD | FORM | PACKAGE--  | UM |
|-----------|--------------|-----------|------|------|------------|----|
| 01282-051 | CAUSTIC SODA | CONSIGNED | #    | DEAD | 001 LB/BLK | LB |

| TYP | REF-# | OPID | REASON                  | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|-----|-------|------|-------------------------|----------|--------|------------|------------|-------|-----------------|------|
| DHU |       | CUI  | HVS RPK ON 1P012297-CL2 | 0.01     | 0.01   | +66,000    | \$6.60     | 59417 |                 |      |
|     |       | CUI  | VMC 51416-MCK USE       | 0.01     | 0.01   | -40,000    | \$4.00-    |       |                 |      |
|     |       | CUI  | VMC 51417-MCK USE       | 0.01     | 0.01   | -15,500    | \$1.55-    |       |                 |      |
|     |       | CUI  | VMC 51421-MCK USE       | 0.01     | 0.01   | -40,000    | \$4.00-    |       |                 |      |
|     |       | CUI  | VMC 51424-MCK USE       | 0.01     | 0.01   | -42,000    | \$4.20-    |       |                 |      |
|     |       | CUI  | VMC 51413-MCK USE       | 0.01     | 0.01   | -40,000    | \$4.00-    |       |                 |      |
|     |       | CUI  | VMC 51422-MCK USE       | 0.01     | 0.01   | -90,000    | \$9.00-    |       |                 |      |
|     |       | CUI  | VMC 51422-MCK USE       | 0.01     | 0.01   | -30,000    | \$3.00-    |       |                 |      |

NET AMOUNT ADJUSTED:

\$23.15-

| TYP | REF-#      | OPID | REASON                 | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|-----|------------|------|------------------------|----------|--------|------------|------------|-------|-----------------|------|
| RCS | 544-P12127 | CSH  | ECON/SDM50298/VMC51412 | 0.01     | 0.01   | -44,210    | \$4.42-    | 12492 |                 |      |
|     | 544-P12795 | CSH  | ECON/VMC51415/SDM50290 | 0.01     | 0.01   | -45,510    | \$4.55-    |       |                 |      |

NET AMOUNT ADJUSTED:

\$8.97-

| TYP | REF-#      | OPID | REASON             | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|--------------------|----------|--------|------------|------------|----------|-----------------|-------|
| RPK | 544-P12266 | CTO  | 15 X 3000 FLOBBINS | 0.01     | 0.01   | -45,000    | \$4.50-    | 13116501 | \$0.00          | 59418 |
|     | 544-P12542 | CTO  | 15 X 3000 FLOBBINS | 0.01     | 0.01   | -45,000    | \$4.50-    |          | \$0.00          |       |
|     | 544-P12556 | CTO  | 80 X 500 DRUMS     | 0.01     | 0.01   | -40,000    | \$4.00-    |          | \$0.00          |       |
|     | 544-P12563 | CTO  | 16 X 500 DRUMS     | 0.01     | 0.01   | -8,000     | \$0.80-    |          | \$0.00          |       |

NET AMOUNT ADJUSTED:

\$13.60-

\$0.00

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD | FORM | PACKAGE--  | UM |
|-----------|--------------|-----------|------|------|------------|----|
| 01282-052 | CAUSTIC SODA | CONSIGNED | MCKS | HEAD | 500 LB DRN | EA |

| TYP | REF-# | OPID | REASON            | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|-----|-------|------|-------------------|----------|--------|------------|------------|-------|-----------------|------|
| DHU |       | CUI  | VMC 51420-MCK USE | 0.05     | 0.05   | -80        | \$4.00-    | 59417 |                 |      |

JS 039657

PGM: CK02L21P VER 01.7  
DATE: 06/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
06/85

REPORT NO: CK02R25A PAGE: 29  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$4.00-

| TYP | REF-#      | OPID | REASON                | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|-----|------------|------|-----------------------|----------|--------|------------|------------|-------|-----------------|------|
| RCS | 544-P11710 | CSH  | NSR VMCS1414 SUM5029C | 0.05     | 0.05   | -63        | \$3.40-    | 12492 |                 |      |

NET AMOUNT ADJUSTED: \$3.40-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD                     | FORM     | -PACKAGE-- | UM         | STARTING   | ENDING | QTY-ADJUST      | AMT-ADJUST | GL # | AMT-ADJUST-DIFF | GL # |
|-----------|--------------|-----------|--------------------------|----------|------------|------------|------------|--------|-----------------|------------|------|-----------------|------|
| 01222-053 | CAUSTIC SODA | CONSIGNED | CUST                     | HEAD     | 001 EA PTK | EA         |            |        |                 |            |      |                 |      |
| TYP       | REF-#        | OPID      | REASON                   | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #   | AMT-ADJUST-DIFF | GL #       |      |                 |      |
| RCS       | 544-P12153   | CSH       | DAKITE/VMCS1419/SOM5029E | 0.26     | 0.30       | -15        | \$3.90-    | 12492  |                 |            |      |                 |      |

NET AMOUNT ADJUSTED: \$3.90-

| PROD-CD   | PROD-NAME | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM         | STARTING   | ENDING | QTY-ADJUST      | AMT-ADJUST | GL # | AMT-ADJUST-DIFF | GL # |
|-----------|-----------|-----------|-----------------|----------|------------|------------|------------|--------|-----------------|------------|------|-----------------|------|
| 01285-003 | NEODGL    | 25-35     | MCKS            | LIQ      | 450 LB DRM | EA         |            |        |                 |            |      |                 |      |
| TYP       | REF-#     | OPID      | REASON          | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #   | AMT-ADJUST-DIFF | GL #       |      |                 |      |
| OH0       |           | CUI       | WEEKLY PHYSICAL | 227.05   | 209.07     | +2         | \$418.14   | 59417  |                 |            |      |                 |      |

NET AMOUNT ADJUSTED: \$418.14

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD     | FORM     | -PACKAGE-- | UM         | STARTING   | ENDING | QTY-ADJUST      | AMT-ADJUST | GL # | AMT-ADJUST-DIFF | GL # |
|-----------|--------------|-----------|----------|----------|------------|------------|------------|--------|-----------------|------------|------|-----------------|------|
| 01315-001 | TRITON N-101 |           | #        | LIQ      | 001 GL BLK | LB         |            |        |                 |            |      |                 |      |
| TYP       | REF-#        | OPID      | REASON   | STARTING | ENDING     | QTY-ADJUST | AMT-ADJUST | GL #   | AMT-ADJUST-DIFF | GL #       |      |                 |      |
| OH0       |              | CUI       | MTL GAIN | 33.42    | 35.07      | +3,010     | \$1,055.61 | 59417  |                 |            |      |                 |      |

NET AMOUNT ADJUSTED: \$1,055.61

| TYP | REF-#      | OPID | REASON         | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|----------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12250 | CTO  | 50 X 480 DRUMS | 33.42    | 35.07  | -24,000    | \$8,020.80- | 13116501 | \$396.00-       | 59418 |
|     | 544-P12616 | CTO  | 50 X 480 DRUMS | 33.42    | 35.07  | -24,000    | \$8,020.80- |          | \$396.00-       |       |

NET AMOUNT ADJUSTED: \$16,041.60- \$792.00-

| PROD-CD   | PROD-NAME    | QUALIFIER | GRAD            | FORM     | -PACKAGE-- | UM  | STARTING     | ENDING   | QTY-ADJUST      | AMT-ADJUST | GL # | AMT-ADJUST-DIFF | GL # |
|-----------|--------------|-----------|-----------------|----------|------------|---|--------------|----------|-----------------|------------|------|-----------------|------|
| 01336-001 | TRITON X-100 |           | #               | LIQ      | 001 GL BLK | LB  |              |          |                 |            |      |                 |      |
| TYP       | REF-#        | OPID      | REASON          | STARTING | ENDING     | QTY-ADJUST <td>AMT-ADJUST</td> <td>GL #</td> <td>AMT-ADJUST-DIFF</td> <td>GL #</td> <td></td> <td></td> <td></td> | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #       |      |                 |      |
| RPK       | 544-P12251   | CTO       | 102 X 480 DRUMS | 60.74    | 60.75      | -48,960   | \$29,738.30- | 13116501 | \$4.90-         | 59418      |      |                 |      |

NET AMOUNT ADJUSTED: \$29,738.30- \$4.90-

JS 039658

WKL08437

PGM: CK02L21P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 30  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD            | PROD-NAME     | QUALIFIER | GRAD                  | FORM                 | -PACKAGE--    | UM         |
|--------------------|---------------|-----------|-----------------------|----------------------|---------------|------------|
| 01361-001          | SULFURIC ACID | 66 BE     | *                     | LIQ                  | 001 GL BLK LR |            |
| -----AVG COST----- |               |           |                       |                      |               |            |
| TYP                | REF-#         | OPID      | REASON                | STARTING             | ENDING        | QTY-ADJUST |
| RPK                | 544-P12330    | CTD       | 134 X 700 DRUMS       | 2.34                 | 2.34          | -67,081    |
|                    | 544-P12331    | CTD       | 200 X 225 LB CARBOOYS | 2.34                 | 2.34          | -45,000    |
|                    |               |           |                       | NET AMOUNT ADJUSTED: | 32,669.50-    | \$0.00     |

| PROD-CD            | PROD-NAME     | QUALIFIER | GRAD               | FORM                 | -PACKAGE--    | UM         |
|--------------------|---------------|-----------|--------------------|----------------------|---------------|------------|
| 01361-002          | SULFURIC ACID | 96%       | *                  | LIQ                  | 001 LA BLK LR |            |
| -----AVG COST----- |               |           |                    |                      |               |            |
| TYP                | REF-#         | OPID      | REASON             | STARTING             | ENDING        | QTY-ADJUST |
| RPK                | 544-P12330    | CTD       | 66 X 700 DRUMS     | 2.34                 | 2.36          | -46,200    |
|                    | 544-P12330    | CTD       | 134 X 700 DRUMS    | 2.34                 | 2.36          | -24,719    |
|                    | 544-P12337    | CUI       | TRANSFER SKUS ONLY | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12409    | CTD       | TRANSFER           | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12429    | CTD       | STOCK TRANSFER     | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12446    | CTD       | TRANSFER           | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12492    | CTD       | TRANSFER           | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12512    | CTD       | TRANSFER SKU       | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12512    | CTD       | TRANSFER SKU       | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12521    | CTD       | TRANSFER SKU       | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12579    | CTD       | TRANSFER           | 2.34                 | 2.36          | -57,500    |
|                    | 544-P12603    | CTD       | TRANSFER           | 2.34                 | 2.36          | -99,000    |
|                    | 544-P12635    | CTD       | TRANSFER           | 2.34                 | 2.36          | -99,000    |
|                    |               |           |                    | NET AMOUNT ADJUSTED: | 626,171.00-   | \$223.69-  |

| PROD-CD            | PROD-NAME     | QUALIFIER | GRAD          | FORM                 | -PACKAGE--    | UM         |
|--------------------|---------------|-----------|---------------|----------------------|---------------|------------|
| 01361-013          | SULFURIC ACID | 66 BE     | MCKS          | LIQ                  | 055 GL PDM EA |            |
| -----AVG COST----- |               |           |               |                      |               |            |
| TYP                | REF-#         | OPID      | REASON        | STARTING             | ENDING        | QTY-ADJUST |
| OND                |               | CUI       | WKLY PHYSICAL | 44.23                | 37.50         | +3         |
|                    |               |           |               | NET AMOUNT ADJUSTED: | 5112.74       |            |

| PROD-CD            | PROD-NAME     | QUALIFIER | GRAD       | FORM                 | -PACKAGE--    | UM         |
|--------------------|---------------|-----------|------------|----------------------|---------------|------------|
| 01361-014          | SULFURIC ACID | 66 BE     | MCKS       | LIQ                  | 015 GL CRY EA |            |
| -----AVG COST----- |               |           |            |                      |               |            |
| TYP                | REF-#         | OPID      | REASON     | STARTING             | ENDING        | QTY-ADJUST |
| OND                |               | CUI       | PHYS COUNT | 11.73                | 11.84         | -3         |
|                    |               |           |            | NET AMOUNT ADJUSTED: | 135.52-       |            |

| -----AVG COST----- |       |      |                         |          |        |            |
|--------------------|-------|------|-------------------------|----------|--------|------------|
| TYP                | REF-# | OPID | REASON                  | STARTING | ENDING | QTY-ADJUST |
| PCR                |       | CUI  | 01361020 OFF-SEE EXPLAN | 11.73    | 11.84  | +62        |

JS 039659

MM108438

PGM: CK02L21P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 31  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$734.08

PROD-CO PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01361-020 SULFURIC ACID 1.835 ELYT MCKS LIQ 015 GL CHY EA

-----AVG COST-----  
TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #  
PCR CUI SKU OFF-C-01361014 14.44 13.51 -62 \$837.62- 13116500

NET AMOUNT ADJUSTED: \$837.62-

PROD-CO PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01369-001 N-BUTYL ALCOHOL \* LIQ 001 GL BLK LB

-----AVG COST-----  
TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #  
OHQ CUI 5/B WT VAR ON IPD 12299 25.66 24.44 -419 \$119.16- 59417

NET AMOUNT ADJUSTED: \$119.16-

-----AVG COST-----  
TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #  
RPK 544-PI2293 CTO WEST SPEC BLEND W18923 25.66 24.44 -2,941 \$754.66- 13116501 \$81.76- 59418

NET AMOUNT ADJUSTED: \$754.66-

PROD-CO PROD-NAME QUALIFIER GRAD FORM -PACKAGE-- UM  
01377-001 CAUSTIC SODA, LIQUID 50% \* LIQ 001 GL BLK LB

-----AVG COST-----  
TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #  
OHQ CUI CRCT OVR DRW 12336/78 7.55 7.32 +733 \$53.66 59417

NET AMOUNT ADJUSTED: \$53.66

-----AVG COST-----  
TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #  
RPK 544-PI2168 CTO 200 X 680 DRUMS 7.55 7.32 -69,789 \$5,269.07- 13116501 \$160.52 59418  
544-PI2225 CTO 300 X 680 DRUMS 7.55 7.32 -52,342 \$3,951.82- \$120.39  
544-PI2235 CTO 300 X 680 DRUMS 7.55 7.32 -52,342 \$3,951.82- \$120.39  
544-PI2262 CTO 100 X 680 DRUMS 7.55 7.32 -34,895 \$2,634.57- \$80.26  
544-PI2316 CTO MC DON BLEND W18924 7.55 7.32 -3,974 \$300.04- \$9.14  
544-PI2324 CTO MILL 80 BLEND W18972 7.55 7.32 -17,977 \$1,357.26- \$41.34  
544-PI2327 CTO 31 X 680 DRUMS 7.55 7.32 -10,817 \$816.68- \$24.88  
544-PI2328 CTO 203 X 680 DRUMS 7.55 7.32 -70,836 \$5,348.12- \$162.92  
544-PI2338 CTO INT EXT BLEND W18975 7.55 7.32 -22,646 \$1,709.77- \$52.08  
544-PI2375 CTO MC DON BLEND W19037 7.55 7.32 -2,148 \$162.17- \$4.94  
544-PI2376 CTO N I BLEND W19035 7.55 7.32 -22,145 \$1,671.95- \$50.94  
544-PI2378 CTO BKL IPO 4412330 7.55 7.32 -960 \$72.48- \$2.21  
544-PI2384 CTO 30 X 65 CARBOYS 7.55 7.32 -1,001 \$75.58- \$2.31  
544-PI2393 CTO SEE IPD W12378 7.55 7.32 -26 \$1.96- \$0.06  
544-PI2404 CTO ITT CAN, W19080 7.55 7.32 -17,533 \$1,323.74- \$40.32

MKL08439

JS 039660

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

|            |     |                        |      |      |         |             |         |
|------------|-----|------------------------|------|------|---------|-------------|---------|
| 544-P12418 | CTO | MILLER BLEND W19081    | 7.55 | 7.32 | -18,243 | \$1,377.35- | \$41.96 |
| 544-P12461 | CTO | NI BLEND W19190        | 7.55 | 7.32 | -21,986 | \$1,659.94- | \$50.56 |
| 544-P12462 | CTO | G.N. BLEND W19214      | 7.55 | 7.32 | -13,711 | \$1,035.18- | \$31.53 |
| 544-P12468 | CTO | BAUSCH W19182          | 7.55 | 7.32 | -23,158 | \$1,748.43- | \$53.26 |
| 544-P12486 | CTO | CAUSTIC 18%            | 7.55 | 7.32 | -18,923 | \$1,429.69- | \$43.53 |
| 544-P12534 | CTO | GEN MOTOR BLEND W19318 | 7.55 | 7.32 | -7,251  | \$547.45-   | \$16.68 |
| 544-P12541 | CTO | NID BLEND W19330       | 7.55 | 7.32 | -22,043 | \$1,664.25- | \$50.70 |
| 544-P12549 | CTO | INT. EXT. BLEND W19292 | 7.55 | 7.32 | -24,446 | \$1,845.67- | \$56.22 |
| 544-P12560 | CTO | ITT CANNON W19300      | 7.55 | 7.32 | -20,069 | \$1,515.21- | \$46.16 |
| 544-P12576 | CTO | 18% BLEND              | 7.55 | 7.32 | -19,182 | \$1,448.24- | \$44.12 |
| 544-P12614 | CTO | CAUSTIC CUT 18%        | 7.55 | 7.32 | -19,055 | \$1,438.65- | \$43.82 |
| 544-P12636 | CTO | MC DON BLEND W19484    | 7.55 | 7.32 | -2,352  | \$177.56-   | \$5.41  |
| 544-P12637 | CTO | MC DON BLEND W19485    | 7.55 | 7.32 | -2,452  | \$185.13-   | \$5.04  |

NET AMOUNT ADJUSTED: \$44,718.80-

\$1,362.29

PROD-CD PROD-NAME QUALIFIER GRAD FORM --PACKAGE-- UM

01377-004 CAUSTIC SODA, LIQUID 50% W.C. \* LIQ 001 GL BLK LB

TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #

RPK 544-P12169 CTO 100 X 680 DRUMS 9.11 7.57 -34,895 \$3,178.93- 13116501 \$537.38 59418

NET AMOUNT ADJUSTED: \$3,178.93-

\$537.38

PROD-CD PROD-NAME QUALIFIER GRAD FORM --PACKAGE-- UM

01377-047 CAUSTIC SODA, LIQUID 18% MCKS LIQ 001 GL BLK LB

TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #

INT CUI WHSE USE/LOSS IN BLECH MKG 1.86 1.71 -10,733 \$183.53- 73550 \$183.53- 59418

NET AMOUNT ADJUSTED: \$183.53-

TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #

OHD CUI LOST IN BLEACH MAKING 1.86 1.71 -6,550 \$112.01- 59417 \$112.01- 59417

NET AMOUNT ADJUSTED: \$112.01-

TYP REF-# OPID REASON STARTING ENDING QTY-ADJUST AMT-ADJUST GL # AMT-ADJUST-DIFF GL #

RPK 544-P12487 CTO BLEACH BLEND 1.86 1.71 -59,056 \$1,098.44- 13116501 \$88.58 59418

544-P12487 CTO BLEACH BLEND 1.86 1.71 -59,056 \$1,098.44- \$88.58

544-P12575 CTO BLEACH BLEND 1.86 1.71 -83,000 \$1,599.60- \$129.00

544-P12618 CTO BLEACH BLEND 1.86 1.71 -77,643 \$1,444.16- \$116.46

NET AMOUNT ADJUSTED: \$5,240.64-

\$422.62

JS 039661

SERVICE CENTER: 544 SANTA FE SPRINGS R-PACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER  | GRAD           | FORM         | -PACKAGE-- | UM              |
|----------------------|------------------|------------|----------------|--------------|------------|-----------------|
| 01391-005            | CHELATING AGENTS | VERSNE 100 | *              | LIQ          | 001 GL BLK | LB              |
| -----AVG COST-----   |                  |            |                |              |            |                 |
| TYP                  | REF-#            | OPID       | REASON         | STARTING     | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12365       | CTO        | 71 X 600 DRUMS | 30.53        | 30.79      | -43,220         |
|                      |                  |            |                | AMT-ADJUST   | GL #       | AMT-ADJUST-DIFF |
|                      |                  |            |                | \$13,195.07- | 13116501   | \$73.47-        |
| NET AMOUNT ADJUSTED: |                  |            |                | \$13,195.07- |            | \$73.47-        |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM        | -PACKAGE-- | UM              |
|----------------------|------------|-----------|----------------|-------------|------------|-----------------|
| 01436-001            | N-PROPANOL |           | *              | LIQ         | 001 GL BLK | LB              |
| -----AVG COST-----   |            |           |                |             |            |                 |
| TYP                  | REF-#      | OPID      | REASON         | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12395 | CTO       | 36 X 370 DRUMS | 30.00       | 37.50      | -13,440         |
|                      |            |           |                | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                      |            |           |                | \$5,107.20- | 13116501   | \$22.85         |
| NET AMOUNT ADJUSTED: |            |           |                | \$5,107.20- |            | \$22.85         |

| PROD-CD              | PROD-NAME        | QUALIFIER          | GRAD          | FORM        | -PACKAGE-- | UM              |
|----------------------|------------------|--------------------|---------------|-------------|------------|-----------------|
| 01532-001            | ISOBUTYL ACETATE |                    | *             | LIQ         | 001 GL BLK | LB              |
| -----AVG COST-----   |                  |                    |               |             |            |                 |
| TYP                  | REF-#            | OPID               | REASON        | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12262       | CTO                | 6 X 397 DRUMS | 35.43       | 33.53      | -2,382          |
| 544-P12427           | CTO              | RELANCE BLEND #269 | 35.43         | 33.53       | -1,418     |                 |
|                      |                  |                    |               | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                      |                  |                    |               | \$843.94-   | 13116501   | \$45.26         |
|                      |                  |                    |               | \$502.40-   |            | \$26.94         |
| NET AMOUNT ADJUSTED: |                  |                    |               | \$1,346.34- |            | \$72.20         |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM       | -PACKAGE-- | UM              |
|----------------------|------------------|-----------|----------------|------------|------------|-----------------|
| 01532-003            | ISOBUTYL ACETATE | 99%       | MCKS           | LIQ        | 055 GL DRM | EA              |
| -----AVG COST-----   |                  |           |                |            |            |                 |
| TYP                  | REF-#            | OPID      | REASON         | STARTING   | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12474       | CTO       | 37 X 540 DRUMS | 160.32     | 160.17     | -2              |
|                      |                  |           |                | AMT-ADJUST | GL #       | AMT-ADJUST-DIFF |
|                      |                  |           |                | \$320.64-  | 13116501   | \$0.30          |
| NET AMOUNT ADJUSTED: |                  |           |                | \$320.64-  |            | \$0.30          |

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM        | -PACKAGE-- | UM              |
|----------------------|------------------|-----------|----------------|-------------|------------|-----------------|
| 01561-001            | ETHANOL (NEOSOL) | 190       | *              | LIQ         | 001 GL BLK | LB              |
| -----AVG COST-----   |                  |           |                |             |            |                 |
| TYP                  | REF-#            | OPID      | REASON         | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12520       | CTO       | 18 X 366 DRUMS | 25.15       | 25.00      | -6,660          |
|                      |                  |           |                | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                      |                  |           |                | \$1,674.99- | 13116501   | \$9.99          |
| NET AMOUNT ADJUSTED: |                  |           |                | \$1,674.99- |            | \$9.99          |

| PROD-CD            | PROD-NAME        | QUALIFIER          | GRAD         | FORM        | -PACKAGE-- | UM              |
|--------------------|------------------|--------------------|--------------|-------------|------------|-----------------|
| 01562-001          | ETHANOL (NEOSOL) | 8-190              | *            | LIQ         | 001 GL BLK | LB              |
| -----AVG COST----- |                  |                    |              |             |            |                 |
| TYP                | REF-#            | OPID               | REASON       | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                | 544-P12208       | CTO                | 36 X 366 DR- | 24.75       | 25.15      | -12,687         |
| 544-P12280         | CTO              | 20 X 366 NEW DRUMS | 24.75        | 25.15       | -7,403     |                 |
|                    |                  |                    |              | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                    |                  |                    |              | \$3,140.03- | 13116501   | \$50.75-        |
|                    |                  |                    |              | \$1,852.04- |            | \$29.93-        |

JS 039662

MM108441

FORM: CK02L2IP VER 01.7

DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02H2SA PAGE: 34  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

NET AMOUNT ADJUSTED: \$4,992.07-

\$80.68-

PROD-CD PROD-NAME QUALIFIER  
01571-001 CAUSTIC POTASH LIQUID 50%

GRAD FORM -PACKAGE-- UN  
\$ LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON              | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST   | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|---------------------|----------|--------|------------|--------------|----------|-----------------|-------|
| RPK | 544-P12234 | CTO  | 100 X 660 DRUMS     | 16.19    | 15.58  | -66,000    | \$10,685.40- | 13116501 | \$402.60        | 59418 |
|     | 544-P12235 | CTO  | 90 X 660 DRUMS      | 16.19    | 15.58  | -53,460    | \$8,055.17-  |          | \$326.10        |       |
|     | 544-P12585 | CTO  | DAKITE, W1938P      | 16.19    | 15.58  | -43,434    | \$7,112.91-  |          | \$267.99        |       |
|     | 544-P12611 | CTO  | CALGON BLEND W19120 | 16.19    | 15.58  | -41,864    | \$6,777.79-  |          | \$255.37        |       |

NET AMOUNT ADJUSTED: \$33,231.26-

\$1,252.08-

PROD-CD PROD-NAME QUALIFIER  
01607-002 CAUSTIC SODA(GLUCONATED) 50%

GRAD FORM -PACKAGE-- UN  
\$ LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-# | OPID | REASON               | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #  | AMT-ADJUST-DIFF | GL # |
|-----|-------|------|----------------------|----------|--------|------------|------------|-------|-----------------|------|
| OHD |       | CUI  | OVR RCT P12339/12378 | 10.51    | 9.81   | -966       | \$94.76-   | 59417 |                 |      |

NET AMOUNT ADJUSTED: \$94.76-

PROD-CD PROD-NAME QUALIFIER  
01675-001 HEPTANES

GRAD FORM -PACKAGE-- UN  
\$ LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON                  | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|-------------------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12799 | CTO  | WEST SPECK BLEND W18923 | 15.11    | 17.63  | -10,732    | \$1,943.57- | 13116501 | \$51.52         | 59418 |
|     | 544-P12494 | CTO  | 37 X 540 DRUMS          | 18.11    | 17.63  | -605       | \$109.87-   |          | \$2.91          |       |
|     | 544-P12327 | CTO  | I P/F SB 1PQ 12494      | 18.11    | 17.63  | -20        | \$3.62-     |          | \$0.09          |       |

NET AMOUNT ADJUSTED: \$2,056.76-

\$54.52

PROD-CD PROD-NAME QUALIFIER  
01696-002 MINERAL SPIRITS, DORLESS SHELLSOL72

GRAD FORM -PACKAGE-- UN  
MCKS LIQ 055 GL DRM EA

-----AVG COST-----

| TYP | REF-#      | OPID | REASON                | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|-----------------------|----------|--------|------------|------------|----------|-----------------|-------|
| RPK | 544-P12569 | CTO  | TRANSFER TO CUS.DRUMS | 112.41   | 112.41 | -8         | \$899.28-  | 13116501 | \$0.00          | 59418 |

NET AMOUNT ADJUSTED: \$899.28-

\$0.00

PROD-CD PROD-NAME QUALIFIER  
01699-001 KEROSENE 450

GRAD FORM -PACKAGE-- UN  
\$ LIQ 001 GL BLK LB

-----AVG COST-----

| TYP | REF-#      | OPID | REASON         | STARTING | ENDING | QTY-ADJUST | AMT-ADJUST  | GL #     | AMT-ADJUST-DIFF | GL #  |
|-----|------------|------|----------------|----------|--------|------------|-------------|----------|-----------------|-------|
| RPK | 544-P12261 | CTO  | 25 X 372 DRUMS | 17.34    | 16.89  | -9,486     | \$1,644.87- | 13116501 | \$42.68         | 59418 |

NET AMOUNT ADJUSTED: \$1,644.87-

\$42.68

JS 039663

MMKL08442

PGM: CK02L21P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 35  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME             | QUALIFIER | GRAD                     | FORM     | -PACKAGE--    | UM         |
|----------------------|-----------------------|-----------|--------------------------|----------|---------------|------------|
| 01806-001            | MCKSCLV VM E P NAPTHA |           | *                        | LIQ      | 001 GL BLK LB |            |
| -----AVG COST-----   |                       |           |                          |          |               |            |
| TYP                  | REF-#                 | OPID      | REASON                   | STARTING | ENDING        | QTY-ADJUST |
| RPK                  | 544-P1230R            | CTD       | MAJOR PAINT BLEND W18956 | 18.48    | 18.40         | -8,271     |
|                      | 544-P12427            | CTD       | RELANCE BLEND #269       | 18.48    | 18.40         | -7,443     |
|                      | 544-P12562            | CTD       | 16 X 347 DRUMS           | 18.48    | 18.40         | -5,663     |
| NET AMOUNT ADJUSTED: |                       |           |                          |          | \$4,061.35-   | \$17.59    |

| PROD-CD              | PROD-NAME   | QUALIFIER | GRAD              | FORM     | -PACKAGE--    | UM         |
|----------------------|-------------|-----------|-------------------|----------|---------------|------------|
| 02398-001            | LIME SLURRY | 40-42X    | *                 | LIQ      | 001 GL BLK LB |            |
| -----AVG COST-----   |             |           |                   |          |               |            |
| TYP                  | REF-#       | OPID      | REASON            | STARTING | ENDING        | QTY-ADJUST |
| RPK                  | 544-P12376  | CTD       | N I BLEND W19035  | 2.52     | 2.52          | -4,905     |
|                      | 544-P12408  | CTD       | ITT CAN-W19080    | 2.52     | 2.52          | -3,924     |
|                      | 544-P12461  | CTD       | NI BLEND W19190   | 2.52     | 2.52          | -4,905     |
|                      | 544-P12541  | CTD       | NI BLEND W19330   | 2.52     | 2.52          | -4,905     |
|                      | 544-P12560  | CTD       | ITT CANNON W19300 | 2.52     | 2.52          | -5,332     |
| NET AMOUNT ADJUSTED: |             |           |                   |          | \$604.08-     | \$0.00     |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |
|----------------------|------------|-----------|----------------|----------|---------------|------------|
| 02703-001            | ISOPHORONE |           | *              | LIQ      | 001 GL BLK LB |            |
| -----AVG COST-----   |            |           |                |          |               |            |
| TYP                  | REF-#      | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST |
| RPK                  | 544-P12348 | CTD       | 43 X 425 DRUMS | 79.31    | 79.57         | -18,520    |
| NET AMOUNT ADJUSTED: |            |           |                |          | \$14,688.21-  | \$48.15-   |

| PROD-CD              | PROD-NAME  | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |
|----------------------|------------|-----------|----------------|----------|---------------|------------|
| 02710-001            | NEODOL     | 25-35     | *              | LIQ      | 001 GL BLK LB |            |
| -----AVG COST-----   |            |           |                |          |               |            |
| TYP                  | REF-#      | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST |
| RPK                  | 544-P12264 | CTD       | 10 X 450 DRUMS | 39.19    | 37.94         | -4,870     |
|                      | 544-P12516 | CTD       | 20 X 450 DRUMS | 39.19    | 37.94         | -8,850     |
| NET AMOUNT ADJUSTED: |            |           |                |          | \$5,376.87-   | \$171.50   |

| PROD-CD              | PROD-NAME       | QUALIFIER | GRAD           | FORM     | -PACKAGE--    | UM         |
|----------------------|-----------------|-----------|----------------|----------|---------------|------------|
| 02719-001            | GLYCOL ETHER PM |           | MSS            | LIQ      | 001 GL BLK LB |            |
| -----AVG COST-----   |                 |           |                |          |               |            |
| TYP                  | REF-#           | OPID      | REASON         | STARTING | ENDING        | QTY-ADJUST |
| RPK                  | 544-P12315      | CTD       | 17 X 420 DRUMS | 40.19    | 40.69         | -7,500     |
| NET AMOUNT ADJUSTED: |                 |           |                |          | \$3,021.75-   | \$30.00-   |

JS 039664

MKIL08443

PGM: CK02L21P VER 01.7  
DATE: 08/30/85 TIME: 23:17:32

MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 36  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD              | PROD-NAME        | QUALIFIER | GRAD           | FORM        | -PACKAGE-- | UM              |
|----------------------|------------------|-----------|----------------|-------------|------------|-----------------|
| 02721-001            | GLYCOL ETHER DPM |           | MSS            | LIQ         | 001 GL BLK | LB              |
| -----AVG COST-----   |                  |           |                |             |            |                 |
| TYP                  | REF-#            | OPID      | REASON         | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12243       | CTD       | 36 X 435 DRUMS | 40.39       | 40.56      | -15,776         |
|                      |                  |           |                | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                      |                  |           |                | \$6,351.73- | 13116501   | \$26.74- 59410  |
| NET AMOUNT ADJUSTED: |                  |           |                | \$6,351.73- |            | \$26.74-        |

| PROD-CD              | PROD-NAME         | QUALIFIER  | GRAD           | FORM        | -PACKAGE-- | UM              |
|----------------------|-------------------|------------|----------------|-------------|------------|-----------------|
| 02755-015            | HYDROGEN PEROXIDE | 35% SUPR D | MSS            | LIQ         | 001 GL BLK | LB              |
| -----AVG COST-----   |                   |            |                |             |            |                 |
| TYP                  | REF-#             | OPID       | REASON         | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12293        | CTD        | 25 X 500 DRUMS | 31.79       | 33.37      | -12,500         |
|                      |                   |            |                | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                      |                   |            |                | \$3,973.75- | 13116501   | \$197.50- 59418 |
| NET AMOUNT ADJUSTED: |                   |            |                | \$3,973.75- |            | \$197.50-       |

| PROD-CD              | PROD-NAME         | QUALIFIER | GRAD            | FORM         | -PACKAGE-- | UM              |
|----------------------|-------------------|-----------|-----------------|--------------|------------|-----------------|
| 02755-017            | HYDROGEN PEROXIDE | 50% TECH  | MSS             | LIQ          | 001 LB BLK | LB              |
| -----AVG COST-----   |                   |           |                 |              |            |                 |
| TYP                  | REF-#             | OPID      | REASON          | STARTING     | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12233        | CTD       | 57 X 500 DRUMS  | 34.19        | 33.65      | -28,500         |
|                      | 544-P12233        | CTD       | 32 X 500 DRUMS  | 34.19        | 33.65      | -16,000         |
|                      | 544-P12233        | CTD       | 44 X 500 DRUMS  | 34.19        | 33.65      | -22,000         |
|                      | 544-P12329        | CTD       | 103 X 500 DRUMS | 34.19        | 33.65      | -51,500         |
|                      |                   |           |                 | AMT-ADJUST   | GL #       | AMT-ADJUST-DIFF |
|                      |                   |           |                 | \$9,744.15-  | 13116501   | \$153.90 59418  |
|                      |                   |           |                 | \$5,470.40-  |            | \$86.40         |
|                      |                   |           |                 | \$7,521.80-  |            | \$118.80        |
|                      |                   |           |                 | \$17,607.85- |            | \$276.10        |
| NET AMOUNT ADJUSTED: |                   |           |                 | \$40,344.20- |            | \$637.20-       |

| PROD-CD              | PROD-NAME              | QUALIFIER | GRAD                     | FORM        | -PACKAGE-- | UM              |
|----------------------|------------------------|-----------|--------------------------|-------------|------------|-----------------|
| 02758-001            | MINERAL SPIRITS, SHORT |           | *                        | LIQ         | 001 GL BLK | LB              |
| -----AVG COST-----   |                        |           |                          |             |            |                 |
| TYP                  | REF-#                  | OPID      | REASON                   | STARTING    | ENDING     | QTY-ADJUST      |
| RPK                  | 544-P12237             | CTD       | 10X VARI MISTAKE TO REC. | 17.84       | 17.87      | -1              |
|                      | 544-P12241             | CTD       | 10 X 360 DRUMS           | 17.84       | 17.87      | -3,672          |
|                      | 544-P12561             | CTD       | ANDERSON BLEND #19379    | 17.84       | 17.87      | -4,378          |
|                      |                        |           |                          | AMT-ADJUST  | GL #       | AMT-ADJUST-DIFF |
|                      |                        |           |                          | \$0.18-     | 13116501   | \$0.00 59418    |
|                      |                        |           |                          | \$655.08-   |            | \$1.11-         |
|                      |                        |           |                          | \$781.04-   |            | \$1.31-         |
| NET AMOUNT ADJUSTED: |                        |           |                          | \$1,436.30- |            | \$2.42-         |

| PROD-CD              | PROD-NAME                | QUALIFIER | GRAD             | FORM       | -PACKAGE-- | UM              |
|----------------------|--------------------------|-----------|------------------|------------|------------|-----------------|
| 02760-001            | MINERAL SPIRITS, REGULAR |           | *                | LIQ        | 001 GL BLK | LB              |
| -----AVG COST-----   |                          |           |                  |            |            |                 |
| TYP                  | REF-#                    | OPID      | REASON           | STARTING   | ENDING     | QTY-ADJUST      |
| INT                  |                          | CUI       | FLUSH BLEND TANK | 17.20      | 17.13      | -150            |
|                      |                          |           |                  | AMT-ADJUST | GL #       | AMT-ADJUST-DIFF |
|                      |                          |           |                  | \$25.70-   | 73550      |                 |
| NET AMOUNT ADJUSTED: |                          |           |                  | \$25.70-   |            |                 |

JS 039665

MM108444

PGM: CK02L2IP VER 01.7  
DATE: 08/30/85 TIME: 23:17:32  
MCKESSON CORP - CHEMICAL GROUP  
MONTHLY STOCK ADJUSTMENTS REPORT BY SERVICE CENTER  
08/85

REPORT NO: CK02R25A PAGE: 37  
JOB: CK02J6 STEP: CK02G25

SERVICE CENTER: 544 SANTA FE SPRINGS REPACK REGION: 511

| PROD-CD            | PROD-NAME       | QUALIFIER | GRAD           | FORM  | PACKAGE       | UM     | STARTING | ENDING | QTY-ADJST | AMT-ADJST   | GL #     | AMT-ADJST-DIFF | GL #  |
|--------------------|-----------------|-----------|----------------|-------|---------------|--------|----------|--------|-----------|-------------|----------|----------------|-------|
| 02761-001          | GLYCOL ETHER DE |           | MSS            | LIQ   | 001 GL BLK LB |        |          |        |           |             |          |                |       |
| -----AVG COST----- |                 |           |                |       |               |        |          |        |           |             |          |                |       |
| TYP                | REF-#           | OPID      | REASON         |       |               |        |          |        |           |             |          |                |       |
| RPK                | 544-P12247      | CTO       | 17 X 450 DRUMS | 50.29 | 50.75         | -7,727 |          |        |           | \$3,885.91- | 13116501 | \$35.54-       | 59418 |

NET AMOUNT ADJUSTED: \$3,885.91- \$35.54-

| PROD-CD            | PROD-NAME     | QUALIFIER | GRAD           | FORM  | PACKAGE       | UM      | STARTING | ENDING | QTY-ADJST | AMT-ADJST   | GL #     | AMT-ADJST-DIFF | GL #  |
|--------------------|---------------|-----------|----------------|-------|---------------|---------|----------|--------|-----------|-------------|----------|----------------|-------|
| 02816-001          | ETHYL HEXANOL |           | *              | LIQ   | 001 LB BLK LB |         |          |        |           |             |          |                |       |
| -----AVG COST----- |               |           |                |       |               |         |          |        |           |             |          |                |       |
| TYP                | REF-#         | OPID      | REASON         |       |               |         |          |        |           |             |          |                |       |
| RPK                | 544-P12400    | CTO       | 56 X 375 DRUMS | 39.32 | 34.23         | -20,790 |          |        |           | \$8,174.63- | 13116501 | \$1,058.21     | 59418 |

NET AMOUNT ADJUSTED: \$8,174.63- \$1,058.21

| PROD-CD            | PROD-NAME | QUALIFIER | GRAD      | FORM   | PACKAGE       | UM | STARTING | ENDING | QTY-ADJST | AMT-ADJST | GL #  | AMT-ADJST-DIFF | GL # |
|--------------------|-----------|-----------|-----------|--------|---------------|----|----------|--------|-----------|-----------|-------|----------------|------|
| 02830-005          | DOBBA     |           | MCKS      | LIQ    | 055 GL RDM EA |    |          |        |           |           |       |                |      |
| -----AVG COST----- |           |           |           |        |               |    |          |        |           |           |       |                |      |
| TYP                | REF-#     | OPID      | REASON    |        |               |    |          |        |           |           |       |                |      |
| DMD                |           | CUI       | WKLY PHYS | 254.80 | 251.52        | -1 |          |        |           | \$251.62- | 59417 |                |      |

NET AMOUNT ADJUSTED: \$251.62-

| PROD-CD            | PROD-NAME  | QUALIFIER | GRAD           | FORM  | PACKAGE       | UM     | STARTING | ENDING | QTY-ADJST | AMT-ADJST   | GL #     | AMT-ADJST-DIFF | GL #  |
|--------------------|------------|-----------|----------------|-------|---------------|--------|----------|--------|-----------|-------------|----------|----------------|-------|
| 02830-006          | DOBBA      |           | *              | LIQ   | 001 GL BLK LB |        |          |        |           |             |          |                |       |
| -----AVG COST----- |            |           |                |       |               |        |          |        |           |             |          |                |       |
| TYP                | REF-#      | OPID      | REASON         |       |               |        |          |        |           |             |          |                |       |
| RPK                | 544-P12397 | CTO       | 20 X 480 DRUMS | 51.50 | 51.52         | -8,940 |          |        |           | \$4,604.10- | 13116501 | \$1.79-        | 59418 |

NET AMOUNT ADJUSTED: \$4,604.10- \$1.79-

JS 039666

MKIL08445